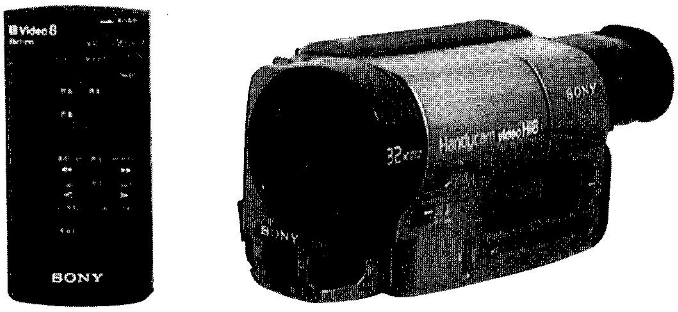
CCD-TR3000/TR3000E
RMT-711/712

SERVICE MANUAL

US Model
Canadian Model
CCD-TR3000
AEP Model
UK Model
Australian Model
CCD-TR3000E
E Model
Hong Kong Model
CCD-TR3000/TR3000E

Video Hi8
Handycam

TK MECHANISM



For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL VI" (9-973-446-11).

SPECIFICATIONS

Video Camera Recorder System

Video recording system
Four rotary heads, Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal (CCD-TR3000E)
PAL color, CCIR standards

Video signal (CCD-TR3000)
NTSC color, EIA standards

Usable cassette
8 mm video format cassette (Hi8 or standard 8 mm)

Tape speed (CCD-TR3000E)
SP mode: Approx. 20 mm (13/16 in)/second
LP mode: Approx. 10 mm (13/32 in)/second (AEP, UK model : playback only)

Tape speed (CCD-TR3000)
SP mode: Approx. 19/32 inches (1.43 cm)/ second
LP mode: Approx. 5/16 inches (0.72 cm)/ second (playback only)

Recording time (CCD-TR3000E : AEP/UK model)
SP mode: 1.5 hours (E5/P5-90)

Recording time (CCD-TR3000E : E/Hong Kong/ Australian model)
SP mode: 1.5 hours (E5/P5-90)
LP mode: 3 hours (E5/P5-90)

Recording time (CCD-TR3000)
SP mode: 2 hours (E6/P6-120)

Playback time (CCD-TR3000E)
SP mode: 1.5 hours (E5/P5-90)
LP mode: 3 hours (E5/P5-90)

Playback time (CCD-TR3000)
SP mode: 2 hours (E6/P6-120)
LP mode: 4 hours (E6/P6-120)

Fastforward/rewind time (CCD-TR3000E)
Approx. 8 min. (E5/P5-90)

Fastforward/rewind time (CCD-TR3000)
Approx. 8 min. (E6/P6-120)

Image device
CCD (Charge Coupled Device)

Viewfinder
Electronic viewfinder (color)

Lens
Combined power zoom lens, 32 x (Digital), 16 x (Optical) (Except E/Hong Kong/Australian model)
64 x (Digital), 16 x (Optical) (E/Hong Kong/Australian model)
Filter diameter 52 mm (2 1/3 in), TTL autofocus system, inner focus wide macro system

Focal distance
4.3 – 68.8 mm (3/16 – 2 3/4 in)
41 – 656 mm (1 5/8 – 26 in) when converted to a 35 mm still camera

Color temperature
Auto
HOLD, Indoor 3,200 K
Outdoor 5,800 K

Minimum illumination (CCD-TR3000E)
3 lux at F1.6
0.1 lux at F1.6 when using the Slow shutter function

Minimum illumination (CCD-TR3000)
2 lux at F1.6

Illumination range (CCD-TR3000E)
3 lux to 100,000 lux

Illumination range (CCD-TR3000)
2 lux to 100,000 lux

Recommended illumination
More than 100 lux

Input and Output Connectors

S video output (AEP/UK model)
4-pin mini DIN
Luminance signal: 1 Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal: 0.3 Vp-p, 75Ω, unbalanced

— Continued on next page —

Hi8 VIDEO CAMERA RECORDER

SONY®

S video Input/output (Except AEP/UK model)
4-pin mini DIN
Luminance signal: 1 Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.286 Vp-p, 75Ω, unbalanced

Video output (AEP/UK model)
Phono jack, 1 Vp-p, 75Ω unbalanced, sync negative

Video Imput/output (Except AEP/UK model)
Phono jack, 1 Vp-p, 75Ω unbalanced, sync negative

Audio output (AEP/UK model)
Phono jacks (2: stereo L and R)
327 mV, (at output impedance 47 kΩ)
impedance less than 2.2 kΩ

Audio input/output (Except AEP/UK model)
Phono jacks (2: stereo L and R)
Input: 327 mV, input impedance more than 47 kΩ
Output: 327 mV, (at output impedance 47 kΩ)
impedance less than 2.2 kΩ

RFU DC OUT
Special minijack, DC 5 V

Headphone jack
Stereo minijack

LANC control jack
Stereo mini-minijack (ø 2.5 mm)

MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kΩ (ø 3.5 mm)

Handycam Stetion Terminal
20 pin special connector

General

Power requirements
7.2 V (battery pack)
6.5 V (AC power adaptor)

Average power consumption
6.0 W during camera recording

Installation
Vertically, horizontally

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
–20°C to +60°C (–4°F to +140°F)

Dimensions (Approx.)
101 x 103 x 205 mm
(4 x 4 1/8 x 8 1/8 in) (w/h/d)

Mass (Approx.)
900 g (1 lb 15 oz) excluding the battery pack, lithium battery, cassette, lens cap and shoulder strap
1,050 g (2 lb 5 oz) including the battery pack NP-520, lithium battery CR2025, cassette E5/P5/E6/P6-90, lens cap and shoulder strap

Microphone
Electret condenser microphone, stereo type

AC power adaptor

Power requirements
100 – 240V AC, 50/60 Hz

Power consumption
22 W

Output voltage
DC OUT: 6.5V, 2.0 A
in operating mode
Battery charge terminal:
8.4 V, 1.4 A in charge mode

Application
Sony battery packs NP-520, NP-500H, NP-720 lithium ion type

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
-20°C to +60°C (-4°F to +140°F)

Dimensions (Approx.)
72 x 44 x 96 mm
(2 4/5 x 1 3/4 x 3 3/4 in) (w/h/d)
including projecting parts and controls

Mass
Approx. 300g (11 oz)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

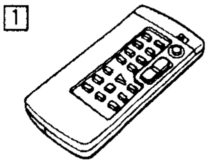
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Supplied Accessories

1


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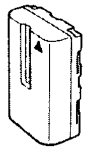

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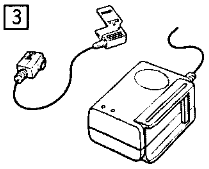

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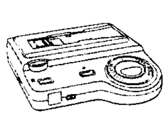

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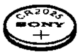

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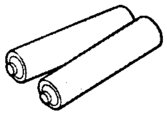

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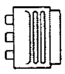

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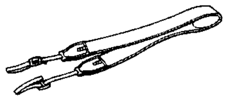

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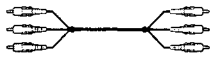

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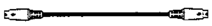

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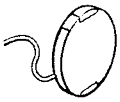

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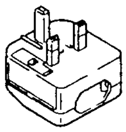

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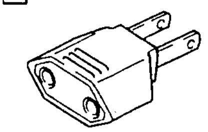

1 **Wireless Remote Commander** (1)
(RMT-711 : TR3000/TR3000E : E, AUS, HK)
(RMT-712 : TR3000E : AEP, UK)
2 **NP-520 Battery pack** (1)
3 **AC-V515 AC power adaptor** (1)
4 **HSA-V515 Handycam Station** (1)
5 **CR2025 Lithium Battery** (1)
(The lithium battery is already installed in your camcorder.)
6 **R6 (size AA) battery for Remote Commander** (2)
7 **21-pin adaptor** (1)
(TR3000E : AEP, UK)
8 **Shoulder strap** (1)
9 **A/V connecting cable** (1)
10 **S video connecting cable** (1)
11 **Lens cap** (1)
12 **Conversion adaptor**
(TR3000E: HK)
13 **Conversion adaptor**
(TR3000E: AEP, UK)

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5. Emphasis Input Level Adjustment (VS-113 board) ········ 6-63
6. DE EMPH Level Adjustment (VS-113 board) ········ 6-63

Section Title Page

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9. Standard 8 mm Mode Y FM Deviation Adjustment (VS-113 board) ········ 6-65
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15. REC CHROMA Level Adjustment (VS-113 board) ········ 6-69
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4. BPF Adjustment ········ 6-72
5. Overall Level Characteristics, Distortion Check ········ 6-73
6. Separation Check ········ 6-73
3-7. Arrangement Diagram for Adjustment Parts ········ 6-74

There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[ATTACH ADDRESS DISPLAY LOCATION OF ACTUAL SIZE]

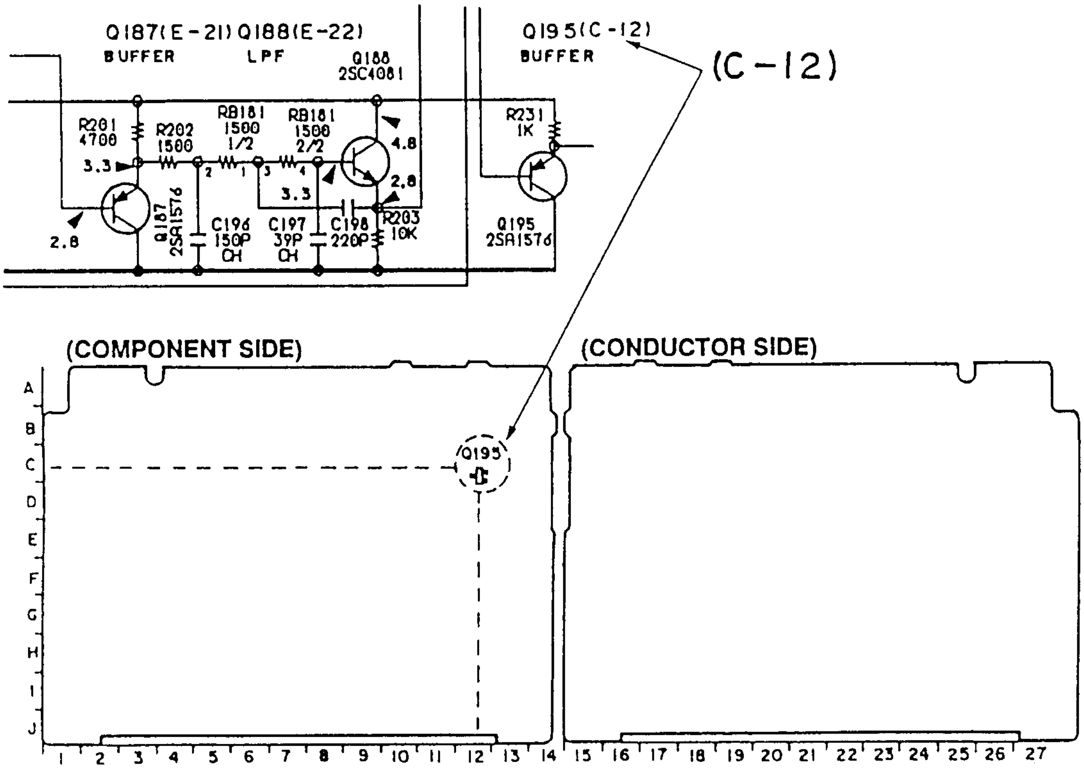
In this manual, the mounted locations of all electrical parts in boards are mentioned in blank space of the printed wiring boards. The location display of actual size is attached under the color reproduction frame at the end of this service manual. It will be available if you take a copy of this to a clear sheet.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 4–67 and 4–91.)
This diagram is useful for repair.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
2.8
4.8
2.8
3.3
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
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[HEAD CLEANING]

After an extended period of use the video image may become indistinet or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [⊗] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

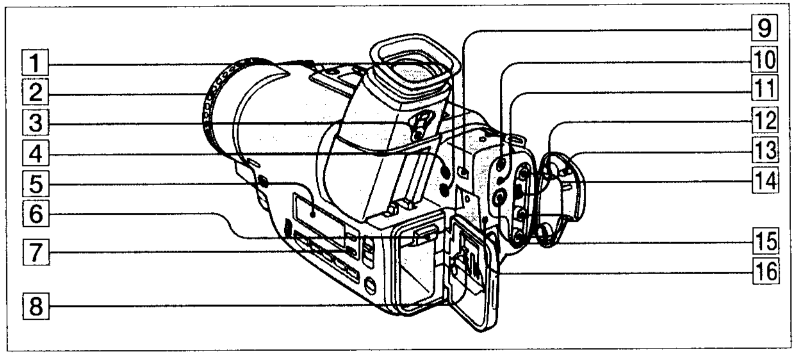
SECTION 1 GENERAL

This section is extracted from instruction manual of CCD-TR3000E : AEP model.

CCD-TR3000/TR3000E

Identifying the Parts

Identificación de las partes

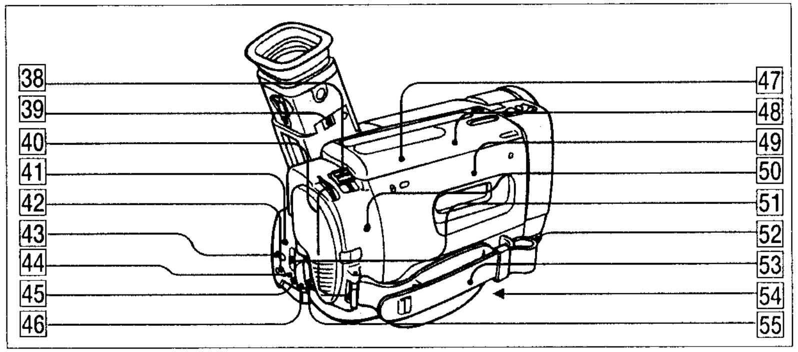


- 1 **TIME button** (p. 26, 41)
- 2 **Focus ring** (p. 46)
- 3 **Viewfinder lens adjustment lever** (p. 12)
- 4 **DATE button** (p. 26, 41)
- 5 **Display window** (p. 103)
- 6 **Battery release lever** (p. 9)
- 7 **INDEX MARK button** (p. 64)
- 8 **Lithium battery compartment** (p. 73)
- 9 **STEADYSHOT switch** (p. 43)
- 10 **∩ (headphones) jack** (p. 18)
- 11 **LANC ⭘ control jack**
  ⭘ stands for Local Application Control Bus System. The ⭘ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
- 12 **RFU DC OUT (RFU adaptor DC output) jack**
- 13 **Jack cover**
- 14 **VIDEO/AUDIO output jacks** (p. 22)
- 15 **S VIDEO output jack** (p. 22)
- 16 **Camera recording/battery lamp** (p. 11)

- 1 **Botón de la hora (TIME)** (páginas 26, 41)
- 2 **Anillo de enfoque** (página 46)
- 3 **Palanca de ajuste de la lente del visor** (página 12)
- 4 **Botón de la fecha (DATE)** (páginas 26, 41)
- 5 **Visualizador** (página 103)
- 6 **Palanca de expulsión de la batería** (página 9)
- 7 **Botón de marcación de señales de índice (INDEX MARK)** (página 64)
- 8 **Compartimiento de la pila de litio** (página 73)
- 9 **Conmutador de filmación estable (STEADYSHOT)** (página 43)
- 10 **Toma de auriculares ∩** (página 18)
- 11 **Toma de control LANC (LANC ⭘)**
  ⭘ significa Sistema de Bus de Control de Aplicación Local. La toma de control ⭘ se emplea para controlar el transporte de la cinta del equipo de vídeo y de los periféricos conectados a él. Esta toma tiene la misma función que la toma CONTROL L o REMOTE.
- 12 **Toma de salida de CC del adaptador de RFU (RFU DC OUT)**
- 13 **Tapa de tomas**
- 14 **Tomas de salida de vídeo/audio (VIDEO/AUDIO)** (página 22)
- 15 **Toma de salida de vídeo S** (página 22)
- 16 **Lámpara de grabación con videocámara/estado de la batería** (página 11)

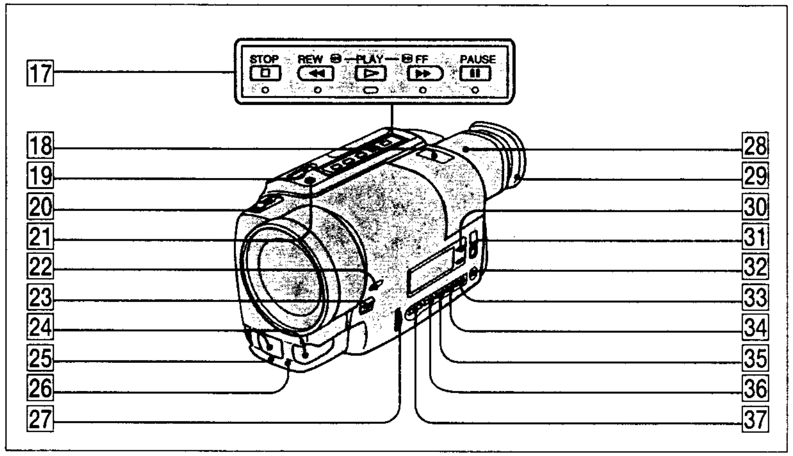
Identifying the Parts

Identificación de las partes



- 38 **Power zoom lever** (p. 14)
- 39 **POWER SAVE switch** (p. 13)
- 40 **Hooks for shoulder strap** (p. 102)
- 41 **MENU button** (p. 31)
- 42 **PICTURE EFFECT button** (p. 38)
- 43 **STILL/FLASH MOTION button** (p. 39, 40)
- 44 **Battery compartment** (p. 9)
- 45 **EXECUTE button** (p. 31)
- 46 **STANDBY cover** (p. 11)
- 47 **≜ (Eject) button (under the lid)** (p. 10)
- 48 **Cassette compartment lid** (p. 10)
- 49 **Cassette compartment** (p. 10)
- 50 **CHARGE lamp** (p. 21)
- 51 **↑ (+) and ↓ (–) buttons** (p. 31)
- 52 **MIC jack (PLUG IN POWER)**
  Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.
- 53 **Grip strap** (p. 15)
- 54 **Tripod receptacle** (p. 16)
- 55 **START/STOP button** (p. 11)

- 38 **Palanca del zoom motorizado** (página 14)
- 39 **Conmutador de ahorro de energía (POWER SAVE)** (página 13)
- 40 **Ganchos para la bandolera** (página 102)
- 41 **Botón de menú (MENU)** (página 31)
- 42 **Botón de efecto de imagen (PICTURE EFFECT)** (página 38)
- 43 **Botón de imagen fija/movimiento rápido (STILL/FLASH MOTION)** (página 39, 40)
- 44 **Compartimiento de la batería** (página 9)
- 45 **Botón de ejecución (EXECUTE)** (página 31)
- 46 **Tapa de alimentación en reserva (STANDBY)** (página 11)
- 47 **Botón de expulsión ≜ (debajo de la tapa)** (página 10)
- 48 **Tapa del compartimiento del videocasete** (página 10)
- 49 **Compartimiento del videocasete** (página 10)
- 50 **Lámpara de carga (CHARGE)** (página 21)
- 51 **Botones ↑ (+) y ↓ (–)** (página 31)
- 52 **Toma de micrófono (MIC) (encendido automático al conectar) (PLUG IN POWER)**
  Conecte a esta toma un micrófono externo (no suministrado). En esta toma puede conectarse también un micrófono de "encendido automático al conectar."
- 53 **Correa de empuñadura** (página 15)
- 54 **Receptáculo para trípode** (página 16)
- 55 **Botón de inicio/parada de grabación (START/STOP)** (página 11)



17 **Tape transport buttons** (p. 23, 24)
◻ STOP (stop)
◀◀ REW (rewind)
▷ PLAY (playback)
▶▶ FF (fastforward)
❚❚ PAUSE (pause)

18 **Lighting aperture**

19 **EDITSEARCH button** (p. 17)

20 **POWER switch** (p. 11, 23)

21 **END SEARCH button** (p. 27)

22 **FADER/OVERLAP button** (p. 34, 35)

23 **FOCUS switch** (p. 46)

24 **Built-in microphone**

25 **Remote sensor** (p. 102)
Aim the Remote Commander here for remote control.

26 **Camera recording/battery lamp** (p. 11)

27 **CONTROL dial** (p. 53)

28 **Viewfinder** (p. 12)

29 **Eyecup** (p. 15, 16)

30 **COUNTER RESET button** (p. 13)

31 **AUTO LOCK switch** (p. 48, 53)

32 **16:9 WIDE button** (p. 37)

33 **WHT BAL (white balance) button** (p. 60)

34 **GAIN button** (p. 53)

35 **SHUTTER SPEED button** (p. 53)

36 **IRIS button** (p. 53)

37 **PROGRAM AE button** (p. 48)

17 **Botones de transporte de la cinta** (páginas 23, 24)
◻ STOP (parada)
◀◀ REW (rebobinado)
▷ PLAY (reproducción)
▶▶ FF (avance rápido)
❚❚ PAUSE (pausa)

18 **Apertura de iluminación**

19 **Botón de búsqueda para edición y revisión de la grabación (EDITSEARCH)** (página 17)

20 **Conmutador de la alimentación (POWER)** (páginas 11, 23)

21 **Botón de búsqueda del final de la grabación (END SEARCH)** (página 27)

22 **Botón de fundidos/superposición (FADER/OVERLAP)** (páginas 34, 35)

23 **Conmutador de enfoque (FOCUS)** (página 46)

24 **Micrófono incorporado**

25 **Sensor de señales del telemando** (página 102)
Dirija el telemando hacia este sensor para realizar el control a distancia.

26 **Lámpara de grabación con videocámara/ estado de la batería** (página 11)

27 **Dial de control (CONTROL)** (página 53)

28 **Visor** (página 12)

29 **Ocular** (páginas 15, 16)

30 **Botón de reposición del contador (COUNTER RESET)** (página 13)

31 **Conmutador de bloqueo automático (AUTO LOCK)** (páginas 48, 53)

32 **Conmutador de pantalla alargada 16:9 (16:9 WIDE)** (página 37)

33 **Botón de equilibrio del blanco (WHT BAL)** (página 60)

34 **Botón de ganancia (GAIN)** (página 53)

35 **Botón de velocidad del obturador (SHUTTER SPEED)** (página 53)

36 **Botón del iris (IRIS)** (página 53)

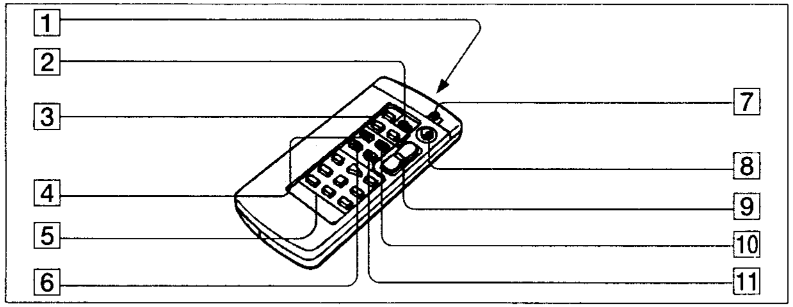
37 **Botón de exposición automática programada (PROGRAM AE)** (página 48)

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.

Telemando

Los botones que tienen el mismo nombre en el telemando y en la videocámara tienen también las mismas funciones.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **DISPLAY button**

3 **INDEX buttons**
INDEX button (p. 66, 67)
INDEX MARK button (p. 64)
INDEX ERASE button (p. 65)

4 **TIME CODE WRITE button** (p. 68)

5 **Tape transport buttons** (p. 23 – 25)

6 **COUNTER RESET button**

7 **HOLD switch**
Slide this switch in the direction of the arrow to prevent the buttons from being accidentally pressed.
Before using this Remote Commander, slide in the direction opposite to the arrow.

8 **START/STOP button**

9 **Power zoom button**

10 **DATA CODE button** (p. 26)

11 **ZERO MEM button** (p. 42, 62)

1 **Transmisor**
Diríjalo hacia el sensor de señales del telemando para controlar la videocámara después de conectar su alimentación.

2 **Botón de visualización (DISPLAY)**

3 **Botones de señales de índice (INDEX)**
Botón de señal de índice (INDEX) (páginas 66, 67)
Botón de marcación de señales de índice (INDEX MARK) (página 64)
Botón de borrado de señales de índice (INDEX ERASE) (página 65)

4 **Botón de escritura de códigos de tiempo (TIME CODE WRITE)** (página 68)

5 **Botones de transporte de la cinta** (páginas 23 - 25)

6 **Botón de reposición del contador (COUNTER RESET)**

7 **Conmutador de bloqueo (HOLD)**
Deslice este conmutador en la dirección de la flecha para evitar pulsar accidentalmente los botones.
Antes de emplear este telemando, deslice este conmutador en la dirección opuesta a la flecha.

8 **Botón de inicio/parada de grabación (START/STOP)**

9 **Botón del zoom motorizado**

10 **Botón de código de datos (DATA CODE)** (página 26)

11 **Botón de memoria de punto cero (ZERO MEM)** (páginas 42, 62)

To prepare the Remote Commander

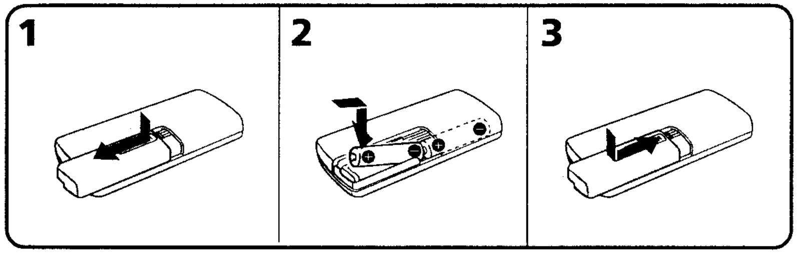
To use the Remote Commander, you must insert two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the R6 (size AA) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

Para preparar el telemando

Pare emplear el telemando tendrá que introducir dos pilas R6 (tamaño AA). Emplee las pilas R6 (tamaño AA) suministradas.

(1) Retire la tapa de las pilas del telemando.
(2) Introduzca ambas pilas R6 (tamaño AA) poniendo correctamente sus polaridades.
(3) Vuelva a poner la tapa de las pilas en el telemando.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

To Use the Remote Commander

Make sure that the COMMANDER is set to ON in the menu system on the camcorder, and that the HOLD switch on the Remote Commander is not working. When using the Handycam Station, set COMMAND MODE to VTR 2 and aim the Remote Commander at the remote sensor on the Handycam Station.

Nota sobre la duración de las pilas

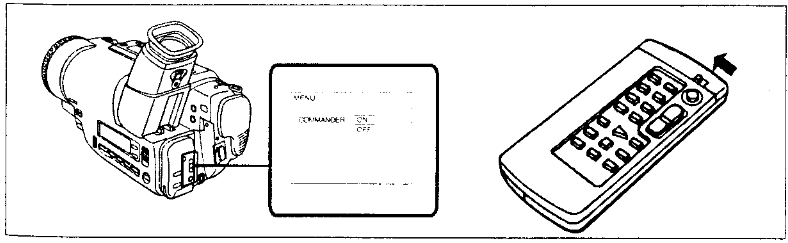
Las pilas del telemando durarán aproximadamente 6 meses bajo condiciones de funcionamiento normales. Cuando las pilas se debiliten o se descarguen, el telemando no funcionará.

Para evitar daños debidos a posibles fugas de las pilas

Quite las pilas cuando no piense emplear el telemando durante mucho tiempo.

Para emplear el telemando

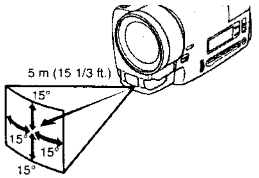
Asegúrese de que COMMANDER esté en ON en el sistema de menú de la videocámara, y que el conmutador HOLD del telemando no esté activado. Cuando utilice la estación Handycam, ponga COMMAND MODE en VTR 2 y dirija el telemando al sensor de señales del telemando situado en la estación Handycam.



1-4

Identifying the Parts

Remote Control Direction



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (p. 98).

Identificación de las partes

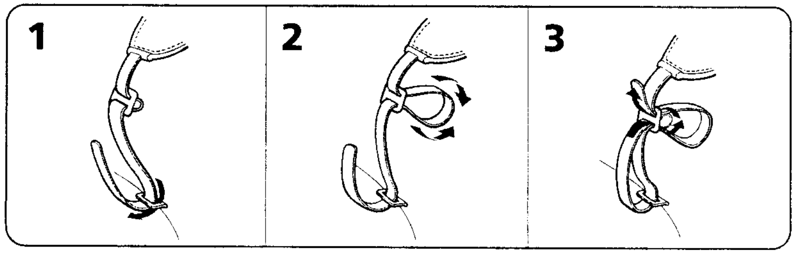
Dirección de control remoto

Notas sobre el telemando

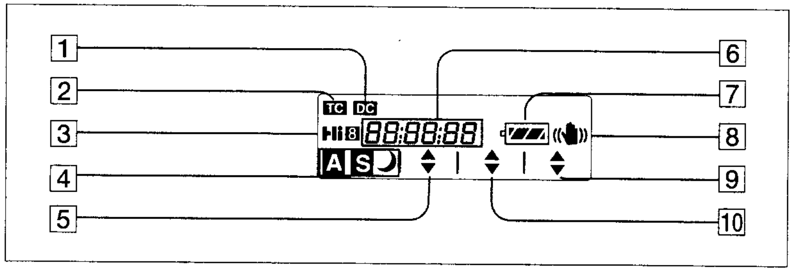
- Mantenga el sensor de señales del telemando alejado de fuentes de luz intensa tales como la iluminación o la luz solar directa. De otra forma, el telemando podrá fallar.
- Asegúrese de que no existan obstáculos entre el sensor de señales del telemando y el telemando.
- Esta videocámara funciona con el modo de telemando VTR 2. Los modos de telemando (1, 2 y 3) se emplean para distinguir esta videocámara de otras videograbadoras Sony y evitar así fallos en la operación de control remoto. Si emplea otra videograbadora Sony en el modo de telemando VTR 2, le recomendamos cambiar el modo de telemando o tapar el sensor de señales del telemando de la videograbadora con un papel negro.

Instalación de la bandolera

Instale la bandolera suministrada en los ganchos para la bandolera (página 98).



In the Display Window



1 **Data Code indicator** (p. 26)
Lights up when displaying the date or time when you recorded (Data Code).

2 **RC time code indicator**
Lights up when displaying the RC time code.

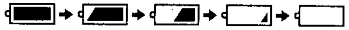
3 **Playing back or recording in Hi8 format**

4 **PROGRAM AE indicators** (p. 48)

5 **Aperture adjustment indicator** (p. 53)

6 **Date or time/Tape counter/Time code indicator** (p. 13, 41, 68)

7 **Remaining battery indicator** (p. 77)



8 **SteadyShot indicator** (p. 43)

9 **Gain adjustment indicator** (p. 54)

10 **Shutter speed adjustment indicator** (p. 54)

En el visualizador

1 **Indicador de códigos de datos** (página 26)
Se enciende cuando se visualiza la fecha o la hora de una grabación (código de datos).

2 **Indicador de código de tiempo RC**
Se enciende cuando se visualiza el código de tiempo RC.

3 **Reproducción o grabación en el formato Hi8**

4 **Indicadores de exposición automática programada (PROGRAM AE)** (página 48)

5 **Indicador de ajuste de apertura** (página 53)

6 **Indicador de la fecha o la hora/contador de la cinta/código de tiempo**
(páginas 13, 41, 68)

7 **Indicador de carga restante en la batería**
(página 77)

8 **Indicador de filmación estable** (página 43)

9 **Indicador de ajuste de ganancia** (página 54)

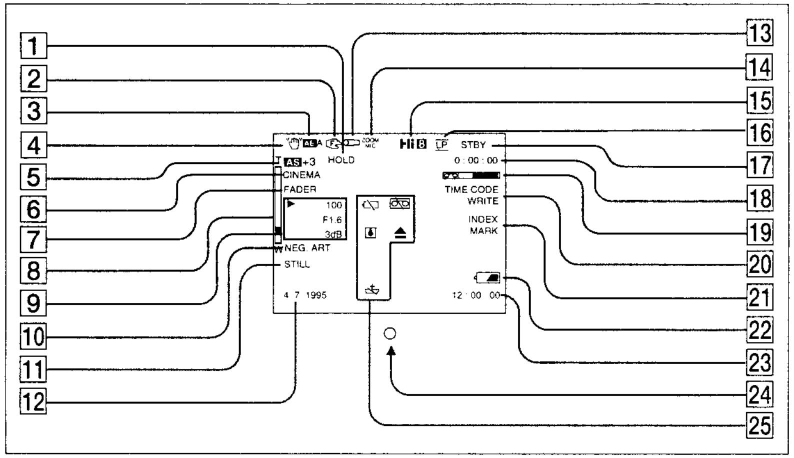
10 **Indicador de ajuste de velocidad del obturador** (página 54)

Identifying the Parts

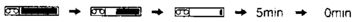
Identificación de las partes

In the Viewfinder

En el visor



1 **White balance indicator** (p. 59)
2 **Manual focusing** (p. 46)
3 **PROGRAM AE indicator** (p. 48)
4 **SteadyShot indicator** (p. 43)
5 **AE Shift indicator** (p. 58)
6 **Wide mode indicator** (p. 36)
7 **FADER indicator/OVERLAP indicator** (p. 34, 35)
8 **Power zoom indicator** (p. 14)
9 **Manual adjustment indicator** (p. 53)
10 **PICTURE EFFECT indicator** (p. 38)
11 **Still/Flash motion indicator** (p. 39, 40)
12 **Data Code indicator** (p. 26)
13 **WIND indicator** (p. 32)
14 **ZOOM MIC indicator** (p. 32)
15 **Playing back or recording in Hi8 format**
16 **Lights up when playing back a tape recorded in LP mode.** (p. 76)
17 **Tape transport mode**
18 **Tape counter/RC time code indicator** (p. 13, 68)
19 **Remaining tape indicator**



20 **TIME CODE WRITE indicator/ ZERO MEM indicator** (p. 42, 62, 68)
21 **Index indicator** (p. 64, 66, 67)
22 **Remaining battery indicator** (p. 77)

23 **Date or Time indicator** (p. 41)
24 **Recording lamp/Battery lamp**
25 **Warning indicators** (p. 106)

1 **Indicador de equilibrio del blanco** (página 59)
2 **Enfoque manual** (página 46)
3 **Indicador de exposición automática programada (PROGRAM AE)** (página 48)
4 **Indicador de filmación estable** (página 43)
5 **Indicador de desplazamiento de AE** (página 58)
6 **Indicador del modo de pantalla alargada** (página 36)
7 **Indicador de fundidos (FADER)/indicador de superposición (OVERLAP)** (páginas 34, 35)
8 **Indicador del zoom motorizado** (página 14)
9 **Indicador de ajuste manual** (página 53)
10 **Indicador de efecto de imagen (PICTURE EFFECT)** (página 38)
11 **Indicador de imagen fija/movimiento rápido** (páginas 39, 40)
12 **Indicador de código de datos** (página 26)
13 **Indicador de grabación con viento (WIND)** (página 32)
14 **Indicador de micrófono zoom (ZOOM MIC)** (página 32)
15 **Reproducción o grabación en el formato Hi8**
16 **Se enciende cuando se reproduce una cinta grabada en el modo LP.** (página 76)
17 **Modo de transporte de la cinta**
18 **Contador de la cinta/indicador de código de tiempo RC** (páginas 13, 68)
19 **Indicador de cinta restante**

20 **Indicador de escritura de código de tiempo (TIME CODE WRITE)/indicador de memoria de punto cero (ZERO MEM)** (páginas 42, 62, 68)
21 **Indicador de señales de índice** (páginas 64, 66, 67)
22 **Indicador de carga restante en la batería** (página 77)

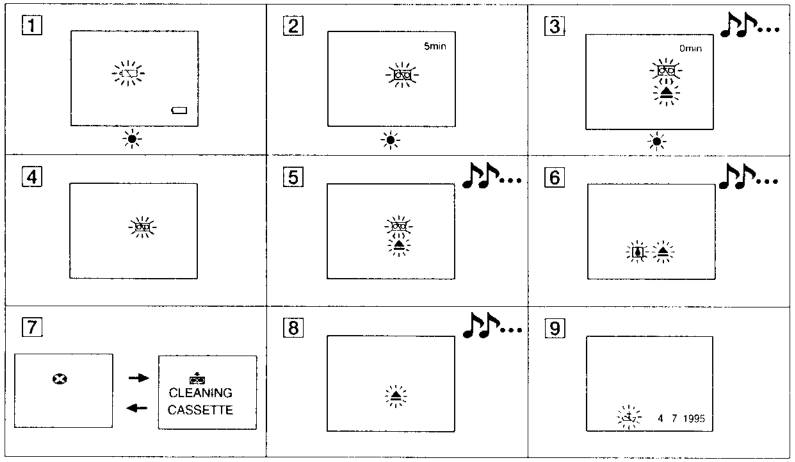
23 **Indicador de la fecha o la hora** (página 41)
24 **Lámpara de grabación/estado de la batería**
25 **Indicadores de aviso** (página 106)

Warning Indicators

Indicadores de aviso

If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.

Si parpadean los indicadores del visor o del visualizador, compruebe lo siguiente:
♪: Podrá oír un pitido cuando BEEP esté en ON.



[1] **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

[2] **The tape is near the end.**
The flashing is slow.

[3] **The tape has run out.**
The flashing becomes rapid.

[4] **No tape has been inserted.**

[5] **The tab on the tape is out (red).**

[6] **Moisture condensation has occurred.** (p. 80)

[7] **The video heads may be contaminated.** (p. 81)
This indicator appears only on the viewfinder.

[8] **Some other trouble has occurred.**
Disconnect the power source and contact your Sony dealer or local authorized facility.

[9] **The lithium battery is weak or is not installed.** (p. 72)

[1] **La batería está débil o completamente descargada.**
Parpadeo lento: La batería está débil.
Parpadeo rápido: La batería está descargada.

[2] **La cinta está casi acabada.**
El parpadeo es lento.

[3] **La cinta ha llegado al final.**
El parpadeo es más rápido.

[4] **No se ha introducido una cinta.**

[5] **La lengüeta de la cinta está afuera (se ve la marca roja).**

[6] **Se ha producido condensación de humedad.** (página 80)

[7] **Las cabezas de vídeo pueden estar sucias.** (página 81)
Este indicador aparece solamente en el visor.

[8] **Se ha producido algún otro problema.**
Desconecte la fuente de alimentación y póngase en contacto con su concesionario Sony o con el centro de reparaciones autorizado por Sony más cercano.

[9] **La pila de litio está débil o no ha sido instalada.** (página 72)

Charging and Installing the Battery Pack

Carga e instalación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V515 AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the mains lead to mains.

(2) Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack in the direction of the arrow. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Unplug the unit from mains, then remove the battery pack and install it into the camcorder. You can also use the battery pack before it is completely charged.

Antes de emplear su videocámara tendrá que cargar e instalar la batería. Para cargar la batería, emplee el adaptador de alimentación de CA AC-V515 suministrado.

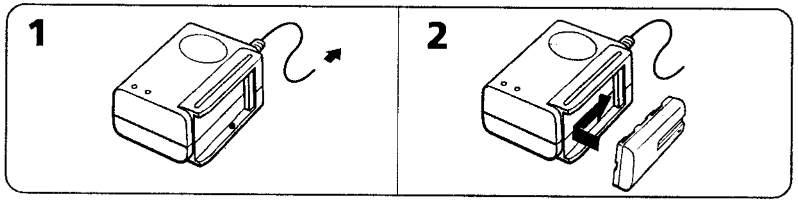
Carga de la batería

Cargue la batería en un lugar nivelado sin vibraciones.

(1) Conecte el cable de alimentación a una toma de corriente.

(2) Alinee la superficie de la batería indicada con la marca ▶ con el borde del obturador de terminales del adaptador de alimentación de CA. Luego coloque y deslice la batería en la dirección de la flecha. La lámpara CHARGE (anaranjada) se encenderá. La carga empezará.

Cuando termine la carga, la lámpara CHARGE se apagará. Desenchufe la unidad de la toma de corriente, luego quite la batería e instálela en la videocámara. También podrá emplear la batería antes de que se cargue por completo.



Charging Time

Battery pack	Charging time*
NP-520 (supplied)	110
NP-500H	100

* Approximate minutes to charge an empty battery pack using the AC-V515. (Lower temperatures require a longer charging time.)

Tiempo de carga

Batería	Tiempo de carga*
NP-520 (suministrada)	110
NP-500H	100

* Minutos aproximados para cargar una batería descargada empleando el AC-V515. (A bajas temperaturas se requiere un tiempo de carga más largo.)

See the next page for further information.

Vea la página siguiente para más información.

Charging and Installing the Battery Pack

Carga e instalación de la batería

Battery Life

Battery pack	Typical recording time**	Continuous recording time***
NP-520 (supplied)	35	70
NP-500H	30	60

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Duración de la batería

Batería	Tiempo de grabación típico**	Tiempo de grabación continua***
NP-520 (suministrada)	35	70
NP-500H	30	60

** Minutos aproximados cuando se graba repitiendo el inicio/parada de grabación o se emplea el zoom y la conexión/desconexión de la alimentación. La duración real de la batería puede que sea más corta.

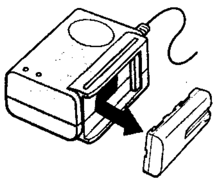
*** Tiempo aproximado de grabación continua en interiores.

To Remove the Battery Pack

Slide the battery pack in the direction of the arrow.

Para retirar la batería

Deslice la batería en la dirección de la flecha.



Notes on charging the battery pack

- The CHARGE lamp will remain lit for a while even if the battery pack is removed and the mains lead is unplugged after charging the battery pack. This is normal.
- If the CHARGE lamp does not light, disconnect the mains lead. After about one minute, reconnect the mains lead again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.
- When a fully charged battery pack is installed, the CHARGE lamp will light once, then go out.

Notas sobre la carga de la batería

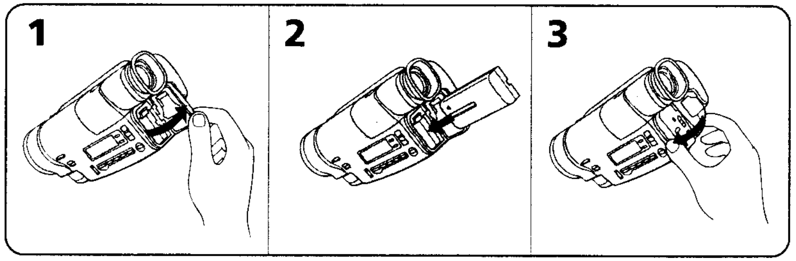
- La lámpara CHARGE permanecerá encendida durante un rato a pesar de que se extraiga la batería y se desenchufe el cable de alimentación después de finalizar la carga. Esto es normal.
- Si la lámpara CHARGE no se enciende, desconecte el cable de alimentación. Después de un minuto aproximadamente, vuelva a conectar el cable de alimentación.
- No podrá operar la videocámara empleando el adaptador de alimentación de CA mientras se esté cargando la batería.
- Cuando se instale una batería completamente cargada, la lámpara CHARGE se encenderá una vez y luego se apagará.

Installing the Battery Pack

(1) Open the lid of the battery compartment.
(2) Insert the battery pack in the direction of the ◄ mark until it catches on the battery release lever.
(3) Close the lid.

Instalación de la batería

(1) Abra la tapa del compartimiento de la batería.
(2) Inserte la batería en la dirección de la marca ◄ hasta que quede fijada por la palanca de liberación de la batería.
(3) Cierre la tapa.

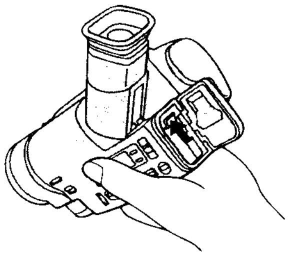


To Remove the Battery Pack

Open the lid of the battery compartment and turn the mouth of the compartment upwards. While lifting the battery release lever, remove the battery pack.

Para retirar la batería

Abra la tapa del compartimiento de la batería y gire la boca del compartimiento hacia arriba. Retire la batería mientras levanta su palanca de liberación.



Inserting a Cassette

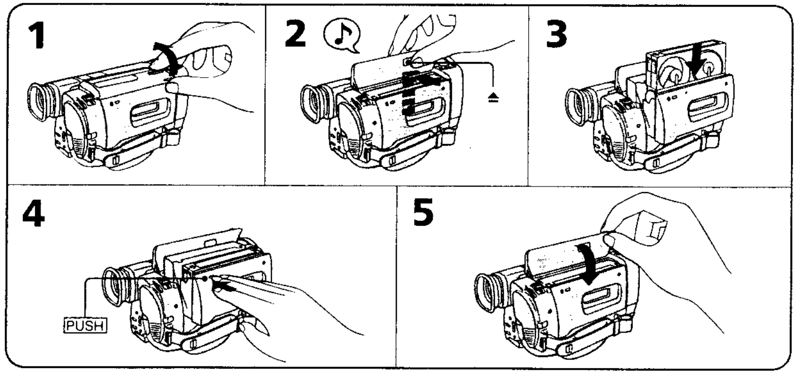
Make sure that the power source is installed.
When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**.

- **(1)** Lift up the lid.
- **(2)** Press ⏏. The cassette compartment automatically lifts up and opens.
- **(3)** Insert a cassette with the window facing out.
- **(4)** Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.
- **(5)** Close the lid.

Colocación de un videocasete

Asegúrese de que la fuente de alimentación esté instalada.
Cuando desee grabar en el sistema Hi8, emplee un videocasete Hi8 **Hi8**.

- **(1)** Levante la tapa.
- **(2)** Presione ⏏. El compartimiento del videocasete se elevará automáticamente y se abrirá.
- **(3)** Introduzca un videocasete con la ventanilla hacia afuera.
- **(4)** Cierre el compartimiento del videocasete presionando su marca "PUSH". El compartimiento del videocasete bajará automáticamente.
- **(5)** Cierre la tapa.



To Eject the Cassette

Lift up the lid of the cassette compartment and press ⏏.

To Prevent Accidental Erasure

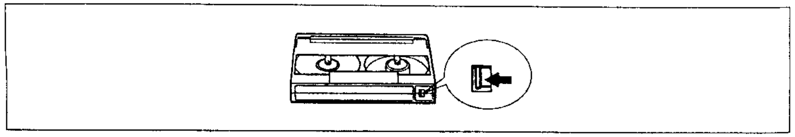
Slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the ▣ and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Para expulsar el videocasete

Levante la tapa del compartimiento del videocasete y presione ⏏.

Para prevenir el borrado accidental

Deslice la lengüeta del videocasete de forma que la marca roja quede expuesta. Si trata de grabar con la marca roja expuesta, los indicadores ▣ y ⏏ parpadearán en el visor y no podrá grabar.
Para volver a grabar en la misma cinta, deslice la lengüeta para cubrir la marca roja.



Camera Recording

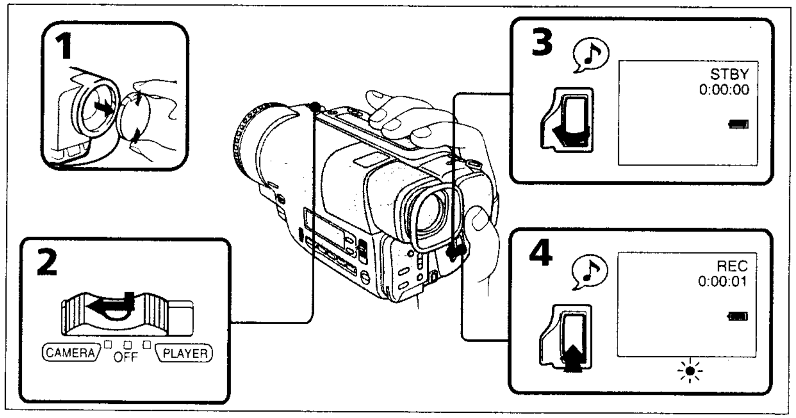
Make sure that the power source is installed and a cassette is inserted.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
To save battery power, the picture in the viewfinder appears only when you bring your face close to the viewfinder with the STANDBY cover open (**Finder power save**).

- **(1)** Remove the lens cap.
- **(2)** While pressing the small green button on the POWER switch, slide it to CAMERA.
- **(3)** Open the STANDBY cover.
- **(4)** Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder. The camera recording/battery lamps located on the front and the rear of the camcorder also light up.

Grabación con la videocámara

Asegúrese de que la fuente de alimentación esté instalada y de que haya un videocasete introducido.
Antes de realizar grabaciones irrepetibles, quizá desee hacer una grabación de prueba para asegurarse de que la videocámara funciona correctamente.
Para ahorrar energía de la batería, la imagen aparecerá solamente en el visor cuando acerque su cara a él estando abierta la tapa STANDBY (**ahorro de energía con el visor**).

- **(1)** Quite la tapa del objetivo.
- **(2)** Mientras presiona el pequeño botón verde del conmutador POWER, gírelo hasta CAMERA.
- **(3)** Abra la tapa STANDBY.
- **(4)** Presione START/STOP. La videocámara empezará a grabar. El indicador "REC" aparecerá y la lámpara roja se encenderá en el visor. Las lámparas de grabación con videocámara/estado de la batería, ubicadas en la parte delantera y trasera de la videocámara, también se encenderán.



See the next page for further information.

Vea la página siguiente para más información.

Camera Recording

Grabación con la videocámara

To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording [b]

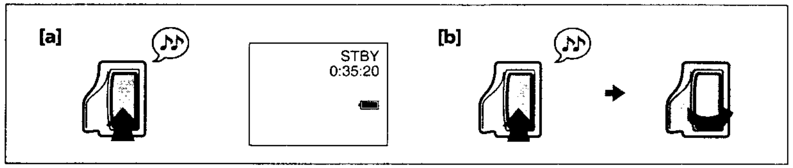
Press START/STOP again. Close the STANDBY cover and slide the POWER switch to OFF. Then, eject the cassette (p. 10) and remove the battery pack (p. 9).

Para detener momentáneamente la grabación [a]

Vuelva a presionar START/STOP. El indicador "STBY" aparecerá en el visor (**modo de espera**).

Para finalizar la grabación [b]

Vuelva a presionar START/STOP. Cierre la tapa STANDBY y deslice el conmutador POWER hasta OFF. Luego, expulse el videocasete (página 10) y retire la batería (página 9).



To Focus the Viewfinder Lens

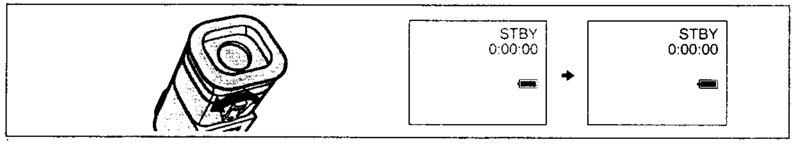
If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens.

Move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.

Para enfocar la lente del visor

Si no puede ver claramente los indicadores del visor, o después de que otra persona haya empleado la videocámara, enfoque la lente del visor.

Mueva la palanca de ajuste de la lente del visor para que los indicadores del visor se puedan ver claramente.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, close the STANDBY cover once and open it again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

You can record tapes in SP (standard play) mode only.

Nota sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos con el videocasete dentro, la videocámara se apagará automáticamente. Esto evita que se descargue la batería y se desgaste la cinta. Para reanudar el modo de espera, cierre una vez la tapa STANDBY y ábrala de nuevo. Para iniciar la grabación, presione START/STOP.

Nota sobre la grabación

Cuando grabe desde el principio de una cinta, haga que ésta avance durante unos 15 segundos antes de empezar a grabar. Así no perderá ninguna escena del principio de la cinta cuando la reproduzca.

Podrá grabar cintas en el modo SP (reproducción estándar) solamente.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on beep sound

As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p. 106).

Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system (p. 32).

Notes on finder power save

- The recording continues even when the picture in the viewfinder disappears during recording.
- If you set POWER SAVE to OFF, the picture in the viewfinder does not disappear even when you turn your face away from the viewfinder.

When moving from indoors to outdoors (or vice versa)

Open the STANDBY cover and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

See the next page for further information.

Nota sobre el contador de la cinta

El contador de la cinta indica el tiempo de grabación o reproducción. Empléelo como guía. Habrá un retardo de varios segundos con relación al tiempo real. Para poner el contador a cero, presione COUNTER RESET.

Nota sobre los pitidos

Como se indica mediante el símbolo ♪ en las ilustraciones, cuando conecte la alimentación o empiece a grabar sonará un pitido, y cuando pare la grabación sonarán dos pitidos, confirmando así la operación. También sonarán varios pitidos como aviso de que se ha producido alguna condición extraña en la videocámara (página 106).

Tenga en cuenta que los pitidos no se grabarán en la cinta. Si no desea escuchar los pitidos, seleccione "OFF" en el sistema de menú (página 32).

Notas sobre el ahorro de energía con el visor

- La grabación continuará aunque la imagen del visor desaparezca durante la grabación.
- Si pone POWER SAVE en OFF, la imagen del visor no desaparecerá aunque separe su cara del visor.

Cuando pase de interiores a exteriores (o viceversa)

Abra la tapa STANDBY y dirija la videocámara hacia un objeto blanco durante unos 15 segundos para que el equilibrio del blanco se ajuste correctamente.

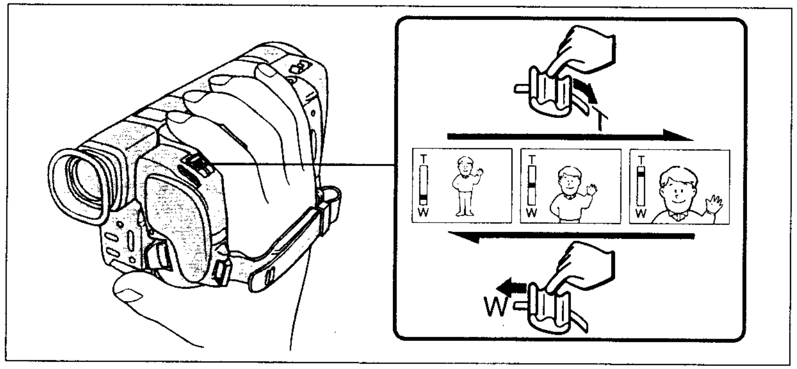
Vea la página siguiente para más información.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

Empleo del zoom

"Zooming" es una técnica de grabación que le permitirá cambiar el tamaño del motivo en la escena.
Para que sus grabaciones tengan una apariencia más profesional, emplee poco el zoom.
Lado "T": Para telefoto (el motivo aparece más próximo)
Lado "W": Para granangular (el motivo aparece más alejado)



Zooming Speed (Variable speed zooming)

Move the power zoom lever quickly for a high-speed zoom, move it slowly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 100 cm (3 1/4 feet) away from the lens surface in the telephoto position, or about 1 cm (1/2 in) away in the wide-angle position.

Velocidad del zoom (zoom de velocidad variable)

Mueva rápidamente la palanca del zoom motorizado para emplear una velocidad de zoom alta; muévala lentamente para emplear una velocidad de zoom relativamente lenta.

Cuando filme un motivo empleando el zoom en telefoto

Si no puede enfocar con nitidez empleando el ajuste máximo del zoom en telefoto, mueva la palanca del zoom motorizado hacia el lado "W" hasta que el motivo quede enfocado nítidamente. En la posición de telefoto podrá filmar un motivo que se encuentre a un mínimo de 100 cm de la superficie del objetivo, y en la posición de granangular podrá filmar un motivo que se encuentre a 1 cm aproximadamente de esa superficie.

Notes on Digital Zoom

- More than 16x zoom is performed digitally if you set D ZOOM to ON in the menu system (p. 32), and the picture quality deteriorates as you go toward the "T" side.
- You can move the power zoom lever until it reaches the end of the "T" or "W" side. At the positions, the zoom speed is at its maximum. In this case, more than approx. 8x zoom is performed digitally.

Notas sobre el zoom digital

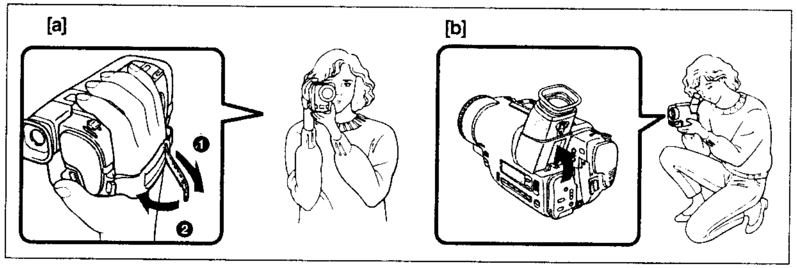
- El zoom de más de 16x se realizará digitalmente si pone D ZOOM en ON en el sistema de menú (página 32), y la calidad de la imagen se deteriorará al avanzar hacia el lado "T".
- Podrá mover la palanca del zoom motorizado hasta que alcance el extremo del lado "T" o "W". En estas posiciones, la velocidad del zoom será la máxima. En este caso, el zoom de más de 8x aproximadamente se realizará digitalmente.

Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

Consejos para filmar mejor

Cuando filme sujetando la videocámara con las manos, los mejores resultados los obtendrá sujetándola según los consejos siguientes:



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position **[b]**.

- Sujete firmemente la videocámara y asegúrela con la correa de la empuñadura para poder manejar fácilmente los controles con su dedo pulgar **[a]**.
- Ponga su codo derecho contra su costado.
- Ponga su mano izquierda debajo de la videocámara para apoyarla. Asegúrese de no tocar el micrófono incorporado.
- Ponga firmemente su ojo contra el ocular del visor.
- Emplee el cuadro del visor como guía para determinar el plano horizontal.
- Podrá grabar también desde una posición baja para obtener un interesante ángulo de grabación. Levante el visor para grabar desde una posición baja **[b]**.

See the next page for further information.

Vea la página siguiente para más información.

Hints for Better Shooting

Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 98).
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm (9/32 in). Otherwise, the screw may damage the inner parts of the camcorder.

If you wear glasses
You can bend back the eyecup to get a better view of viewfinder **[c]**.

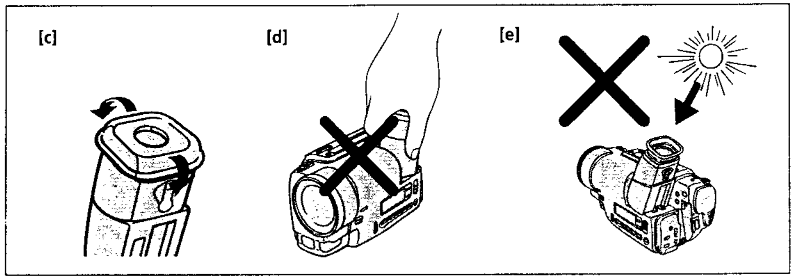
Cautions on the viewfinder
- Do not pick up the camcorder by the viewfinder **[d]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful when placing the camcorder under sunlight or by the window **[e]**.

Consejos para filmar mejor

Ponga la videocámara sobre una superficie plana o emplee un trípode
Pruebe a poner la videocámara sobre una mesa o cualquier otra superficie plana que tenga una altura apropiada. Si dispone de un trípode para cámara fotográfica también podrá emplearlo con la videocámara (página 98).
Cuando emplee un trípode que no sea de Sony, asegúrese de que la longitud de su tornillo sea inferior a 6,5 mm. En caso contrario, el tornillo podría estropear las partes interiores de la videocámara.

Si se pone gafas
Podrá doblar hacia atrás el ocular para ver mejor el visor **[c]**.

Precauciones con el visor
- No tome la videocámara por el visor **[d]**.
- No ponga la videocámara de forma que el visor quede orientado hacia el sol. El interior del visor podría deformarse. Tenga cuidado cuando ponga la videocámara bajo el sol o cerca de una ventana **[e]**.



Checking the Recorded Picture

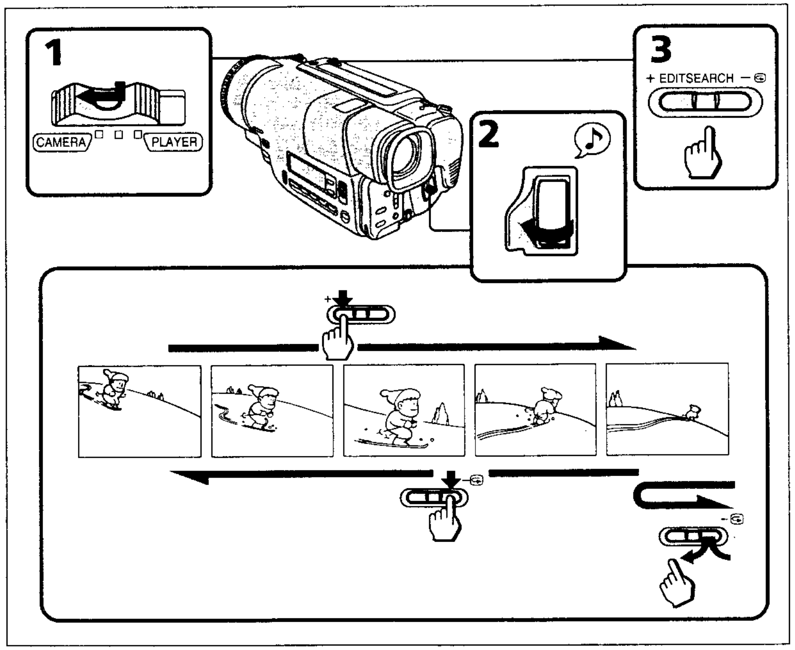
Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.
(2) Open the STANDBY cover.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).

Comprobación de la imagen grabada

Empleando la función EDITSEARCH podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta CAMERA.
(2) Abra la tapa STANDBY.
(3) Presione momentáneamente el lado – (⊜) de EDITSEARCH; los últimos segundos de la parte grabada se reproducirán (**revisión de grabación**).
Mantenga presionado el lado – de EDITSEARCH hasta que la videocámara retroceda hasta la escena que usted desee. La última parte grabada se reproducirá. Para avanzar, mantenga presionado el lado + (**búsqueda de edición**).



See the next page for further information.

Vea la página siguiente para más información.

Checking the Recorded Picture

Comprobación de la imagen grabada

To Stop Playback
Release EDITSEARCH.

To Go Back to the Last Recorded Point After Edit Search
Press END SEARCH. The last recorded point is played back for about 5 seconds and stops. Note that this function does not work once you eject the cassette after you recorded in the tape.

To Begin Re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

To Monitor the Sound While Viewing the Playback Picture in the Viewfinder
Connect headphones (not supplied) to the ∩ jack. Play back the tape in PLAYER mode (p. 23).

Para detener la reproducción
Deje de presionar EDITSEARCH.

Para volver al último punto grabado después de la búsqueda de edición
Presione END SEARCH. El último punto grabado se reproducirá durante unos 5 segundos y luego se parará.
Tenga en cuenta que esta función no causará ningún efecto una vez que expulse el videocasete después de haber grabado la cinta.

Para empezar la regrabación
Presione START/STOP. La regrabación empezará desde el punto donde dejó de presionar EDITSEARCH. Siempre que no expulse la cinta, la transición entre la última escena que usted haya grabado y la escena siguiente que piense grabar se realizará suavemente.

Para comprobar el sonido mientras se ve la imagen de reproducción en el visor
Conecte los auriculares (no suministrados) a la toma ∩. Reproduzca la cinta en el modo PLAYER (página 23).

Connections for Playback

Conexiones para la reproducción

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use the mains for the power source (p. 28).

Podrá emplear esta videocámara como una videograbadora conectándola a su televisor para la reproducción. Hay algunas formas de conectar la videocámara a su televisor. Cuando compruebe la imagen de reproducción conectando la videocámara a su televisor, le recomendamos que emplee la corriente del hogar como fuente de alimentación (página 28).

Connecting to a TV Using the Handycam Station

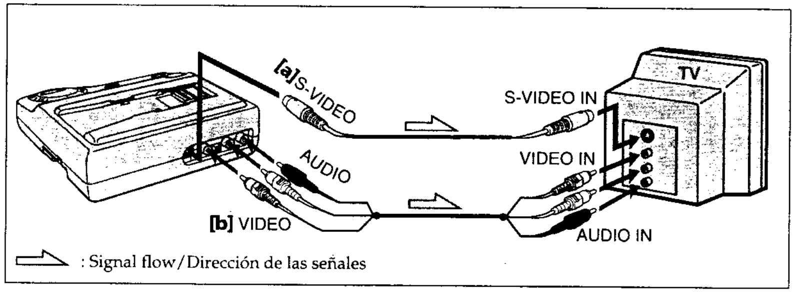
Once you connect the supplied HSA-V515 Handycam Station to your TV or VCR, you can easily view the picture on your TV.

Conexión a un televisor empleando la estación Handycam

Una vez conectada la estación Handycam HSA-V515 a su televisor o videograbadora podrá ver fácilmente la imagen en su televisor.

To Connect the Handycam Station to a TV
Connect the Handycam Station to the inputs on the TV using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.
If you are going to connect the Handycam Station using the S video cable **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

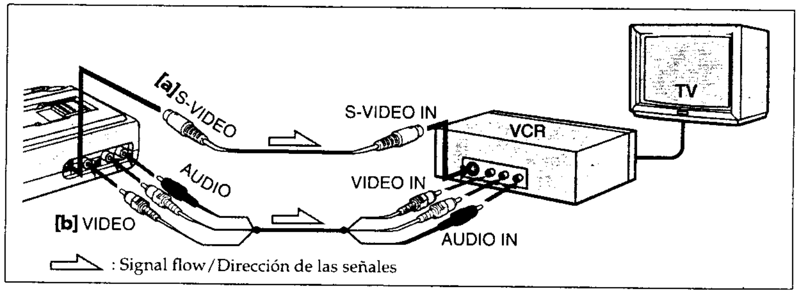
Para conectar la estación Handycam a un televisor
Conecte la estación Handycam a las entradas del televisor empleando el cable de conexión A/V suministrado. Ponga el selector TV/VCR del televisor en VCR. Si va a conectar la estación Handycam empleando el cable de vídeo S **[a]**, no será necesario conectar la clavija amarilla (vídeo) del cable de conexión A/V **[b]**.



⇨ : Signal flow/Dirección de las señales

If your TV is already connected to a VCR
Connect the Handycam Station to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

Si su televisor ya está conectado a una videograbadora
Conecte la estación Handycam a las entradas LINE IN de la videograbadora empleando el cable de conexión A/V suministrado. Ponga el selector de entrada de la videograbadora en LINE. Ponga el selector TV/VCR del televisor en VCR.



⇨ : Signal flow/Dirección de las señales

If your TV or VCR is a monaural type
Connect only the white plug for audio on both the Handycam Station and the TV or VCR. With this connection, the sound is monaural.

Si su televisor o videograbadora es de tipo monofónico
Conecte solamente la clavija blanca para audio en la estación Handycam y en el televisor o videograbadora. Con esta conexión, el sonido será monofónico.

See the next page for further information.

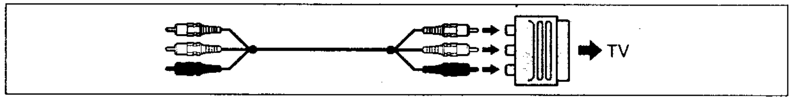
Vea la página siguiente para más información.

Connections for Playback

Conexiones para la reproducción

If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

Si su televisor tiene un conector de 21 contactos (EUROCONNECTOR)
Emplee el adaptador de 21 contactos suministrado.



To connect to a TV or VCR without Video/Audio input jacks
Use an RFU adaptor (not supplied).

Para conectar a un televisor o videograbadora sin tomas de entrada de vídeo/audio
Emplee un adaptador RFU (no suministrado).

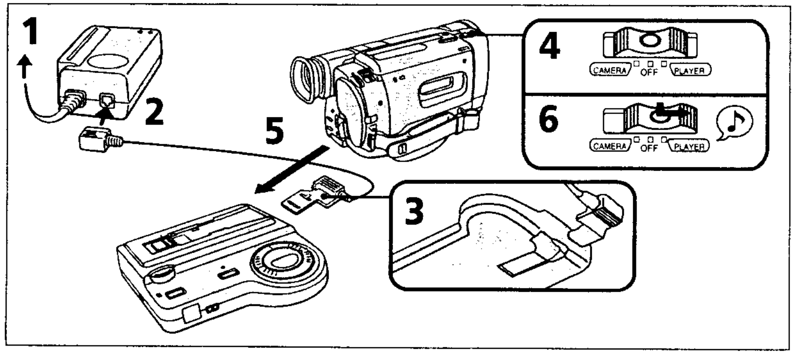
To Connect the Camcorder to the Handycam Station

(1) Connect the mains lead of the supplied AC power adaptor to mains.
(2) Connect the supplied connecting cord to the DC OUT jack on the AC power adaptor.
(3) Insert the connecting plate into the guides at the bottom of the Handycam Station.
(4) Set the POWER switch of the camcorder to OFF.
(5) Aligning the bottom of the camcorder with the arrow mark on the Handycam Station, slide the camcorder along the guide until it clicks.
(6) Set the POWER switch of the camcorder to PLAYER.

Para conectar la videocámara a la estación Handycam

(1) Conecte el cable de alimentación del adaptador de alimentación de CA suministrado a la toma de corriente.
(2) Conecte el cable de conexión suministrado a la toma DC OUT del adaptador de alimentación de CA.
(3) Introduzca la placa de conexión en las guías de la parte inferior de la estación Handycam.
(4) Ponga el conmutador POWER de la videocámara en OFF.
(5) Alinee la parte inferior de la videocámara con la flecha de la estación Handycam y deslice la videocámara a lo largo de la guía hasta que haga un ruido seco.
(6) Ponga el conmutador POWER de la videocámara en PLAYER.

1-13



You can charge the battery pack installed in the camcorder by connecting the AC power adaptor to the Handycam Station and setting the HANDYCAM POWER switch to OFF. The CHARGE lamp lights up, and goes out when charging is completed. Charging time of the supplied NP-520 battery pack is approx. 2 hours and 30 minutes.

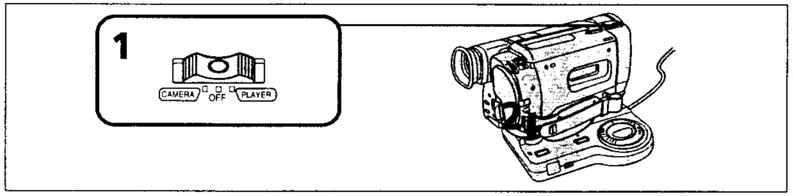
Caution
Do not set the POWER switch to CAMERA. The Handycam Station can be used only for PLAYER mode.

To remove the camcorder
(1) Set the POWER switch of the camcorder to OFF.
(2) Press RELEASE on the Handycam Station.

Podrá cargar la batería instalada en la videocámara conectando el adaptador de alimentación de CA a la estación Handycam y poniendo el conmutador HANDYCAM POWER en OFF. La lámpara CHARGE se encenderá, y se apagará una vez completada la carga. El tiempo de carga de la batería NP-520 suministrada es de 2 horas y 30 minutos aproximadamente.

Precaución
No ponga el conmutador POWER en CAMERA. La estación Handycam sólo se podrá emplear para el modo PLAYER.

Para retirar la videocámara
(1) Ponga el conmutador POWER de la videocámara en OFF.
(2) Presione RELEASE de la estación Handycam.



See the next page for further information.

Vea la página siguiente para más información.

Connections for Playback

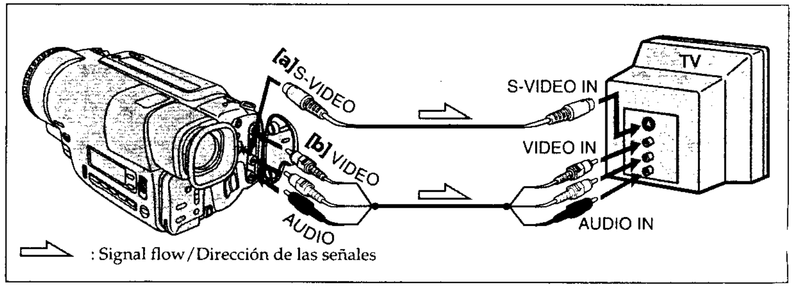
Conexiones para la reproducción

Connecting Directly to a TV

Open the jack cover and connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.
If you are going to connect the camcorder using the S video cable **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

Conexión directa a un televisor

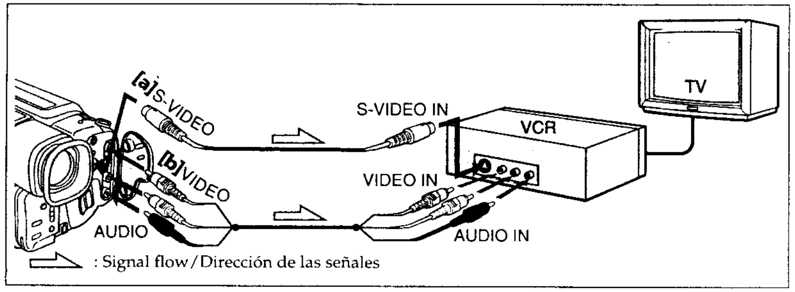
Abra la tapa de las tomas y conecte la videocámara a las entradas del televisor empleando el cable de conexión A/V suministrado. Ponga el selector TV/VCR del televisor en VCR.
Si va a conectar la videocámara empleando el cable de vídeo S **[a]**, no será necesario conectar la clavija amarilla (vídeo) del cable de conexión A/V **[b]**.



: Signal flow/Dirección de las señales

If a VCR is already connected to your TV
Connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

Si ya está conectada una videograbadora a su televisor
Conecte la videocámara a las entradas LINE IN de la videograbadora empleando el cable de conexión A/V suministrado. Ponga el selector de entrada de la videograbadora en LINE. Ponga el selector TV/VCR del televisor en VCR.



: Signal flow/Dirección de las señales

If your TV or VCR is a monaural type
Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

Si su televisor o videograbadora es de tipo monofónico
Conecte solamente la clavija blanca para audio en la videocámara y en el televisor o videograbadora. Con esta conexión, el sonido será monofónico.

Playing Back a Tape

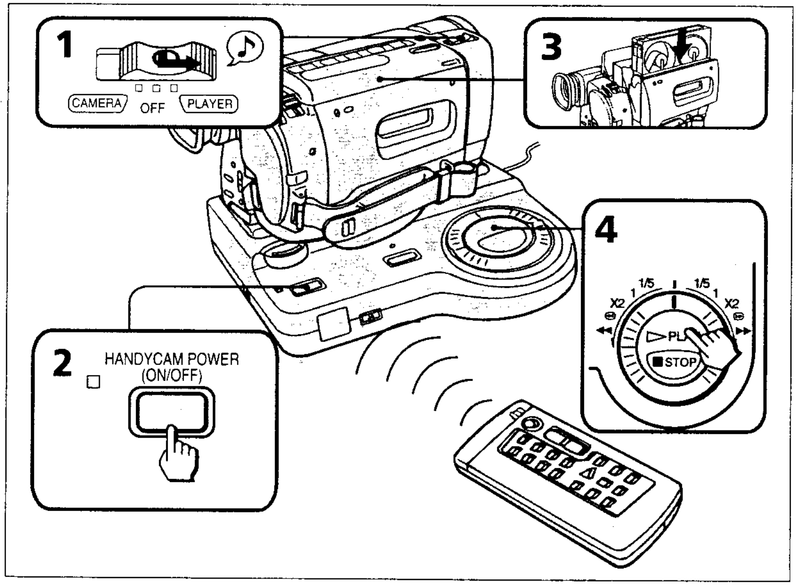
Reproducción de una cinta

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 18 – 22).
Here's how to play back a tape using the supplied HSA-V515 Handycam Station.

(1) While pressing the small green button on the POWER switch, slide it to PLAYER. The tape transport buttons light up. You can also use these buttons to control playback.
(2) Press HANDYCAM POWER to turn the HANDYCAM POWER lamp on the Handycam Station into green.
(3) Insert the recorded tape with the window facing out.
(4) Press ▷ to start playback.

Podrá comprobar la imagen de reproducción en el visor. También podrá comprobarla en la pantalla de un televisor, después de haber conectado la videocámara a un televisor o videograbadora (páginas 18 – 22).
A continuación se muestra cómo reproducir una cinta empleando la estación Handycam HSA-V515 suministrada.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta PLAYER. Los botones de transporte de la cinta se encenderán. También podrá emplear estos botones para controlar la reproducción.
(2) Presione HANDYCAM POWER para encender en verde la lámpara HANDYCAM POWER de la estación Handycam.
(3) Introduzca el videocasete grabado con la ventanilla hacia afuera.
(4) Presione ▷ para iniciar la reproducción.



To stop playback, press ■.
To rewind the tape, press ◀◀ or turn the shuttle ring to ◀◀.
To advance the tape rapidly, press ▶▶ or turn the shuttle ring to ▶▶.

See the next page for further information.

Para detener la reproducción, presione ■.
Para rebobinar la cinta, presione ◀◀ o gire el anillo de lanzadera hasta ◀◀.
Para avanzar rápidamente la cinta, presione ▶▶ o gire el anillo de lanzadera hasta ▶▶.

Vea la página siguiente para más información.

Using the Remote Commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the R6 (size AA) batteries and slide the HOLD switch in the opposite direction to the arrow.
When using the Remote Commander with the Handycam Station, set COMMAND MODE on the Handycam Station to VTR 2.

To Display the Viewfinder Screen Indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

Various Playback Modes

To View a Still Picture (Playback pause)

Press II during playback. To resume playback, press II or ▷.

To Locate a Scene (Picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To Monitor the High-speed Picture While Advancing the Tape or Rewinding (Skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To View the Picture in a Sequence of Stop-motion Images

Press EDITSEARCH in Playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To View the Picture at 1/5 Speed (Slow playback)

Press I▶ on the Remote Commander during playback. To resume normal playback, press ▶.
If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Empleo del telemando

Podrá controlar la reproducción empleando el telemando suministrado. Antes de emplear el telemando, introduzca las pilas R6 (tamaño AA) y deslice el conmutador HOLD en dirección opuesta a la indicada por la flecha.
Cuando emplee el telemando con la estación Handycam, ponga COMMAND MODE de la estación Handycam en VTR2.

Para visualizar los indicadores de la pantalla del visor en el televisor

Presione DISPLAY del telemando. Para borrar los indicadores, presione de nuevo DISPLAY.

Varios modos de reproducción

Para ver una imagen fija (pausa de reproducción)

Presione II durante la reproducción. Para reanudar la reproducción, presione II o ▷.

Para localizar una escena (búsqueda de imagen)

Mantenga presionado ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, deje de presionar el botón.

Para comprobar la imagen a alta velocidad mientras la cinta avanza o se rebobina (exploración con salto)

Mantenga presionado ◀◀ mientras rebobina la cinta o ▶▶ mientras la avanza. Para reanudar la reproducción normal, presione ▷.

Para ver la reproducción en una secuencia de imágenes paradas y en movimiento

Presione EDITSEARCH en el modo de pausa de reproducción. Si mantiene presionado EDITSEARCH, podrá ver la imagen de reproducción en la dirección de avance (+) o de retroceso (–).

Para ver la imagen a 1/5 de la velocidad normal (reproducción lenta)

Presione I▶ del telemando durante la reproducción. Para reanudar la reproducción normal, presione ▶. Si la reproducción lenta dura 1 minuto aproximadamente, ésta cambiará automáticamente a la velocidad de reproducción normal.

To View the Picture at Double Speed

For double speed playback in the reverse direction, press <, then press x2 on the Remote Commander during playback. For double speed playback in the forward direction, press >, then press x2 during playback. To resume normal playback, press ▶.

To View the Picture Frame-by-Frame

Press ◀II or II▶ on the Remote Commander in playback pause mode. If you keep pressing the button, you can view the picture at 1/25 speed. To resume normal playback, press ▶.

To Change the Playback Direction

Press < on the Remote Commander for reverse direction or > on the Remote Commander for forward direction during playback. To resume normal playback, press ▶.

To Select the Playback Sound

Change the "HiFi SND" mode setting in the menu system (p. 33).

Using the Shuttle Ring on the Handycam Station

You can enjoy some of the playback modes using the shuttle ring. Turn the shuttle ring clockwise or counterclockwise to point the desired indication around the ring.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
- Horizontal noise appears at the centre of the screen when you play back a tape in reverse if the RC time code or the Data Code is displayed on the screen. This is normal.

See the next page for further information.

Para ver la imagen a doble velocidad

Para reproducir a doble velocidad en la dirección de retroceso, presione <, y luego presione x2 del telemando durante la reproducción. Para reproducir a doble velocidad en la dirección de avance, presione >, y luego presione x2 durante la reproducción. Para reanudar la reproducción normal, presione ▶.

Para ver imágenes cuadro a cuadro

Presione ◀II o II▶ del telemando en el modo de pausa de reproducción. Si mantiene presionado el botón, podrá ver la imagen a 1/25 de la velocidad normal. Para reanudar la reproducción normal, presione ▶.

Para cambiar la dirección de la reproducción

Presione < del telemando para reproducir en retroceso o > para reproducir hacia adelante durante la reproducción. Para reanudar la reproducción normal, presione ▶.

Para seleccionar el sonido de la reproducción

Cambie el ajuste del modo "HiFi SND" en el sistema del menú (página 33).

Empleo del anillo de lanzadera de la estación Handycam

Podrá disfrutar de algunos modos de reproducción empleando el anillo de lanzadera. Gire el anillo de lanzadera hacia la derecha o izquierda para indicar la posición deseada alrededor del anillo.

Notas sobre la reproducción

- En los diversos modos de reproducción aparecerán rayas en la imagen y el sonido se silenciará.
- Cuando el modo de pausa de reproducción dure más de 5 minutos, la videocámara se pondrá automáticamente en el modo de parada.
- Si el código de tiempo RC o el código de datos se visualiza en la pantalla, en el centro de la imagen aparecerá ruido horizontal cuando reproduzca una cinta en retroceso. Esto es normal.

Vea la página siguiente para más información.

Displaying the Date or Time When You Recorded — Data Code Function

Even if you did not record the date or time when you were recording, you can display the date or time when you recorded (Data Code) on the TV during playback or editing. The Data Code is also displayed in the viewfinder and the display window.

To Display the Date When You Recorded

Press DATE on the camcorder **[a]**, or press DATA CODE on the Remote Commander **[b]**. To make the date disappear, press DATE again or DATA CODE twice.

To Display the Time When You Recorded

Press TIME on the camcorder **[a]**, or press DATA CODE on the Remote Commander twice **[b]**. To make the time disappear, press it again.

Visualización de la fecha o la hora cuando se graba — Función de códigos de datos

Aunque no grabe la fecha o la hora al hacer una grabación, durante la reproducción o la edición podrá visualizar en el televisor la fecha y la hora en la que hizo esa grabación (código de datos). El código de datos se visualizará también en el visor y en el visualizador.

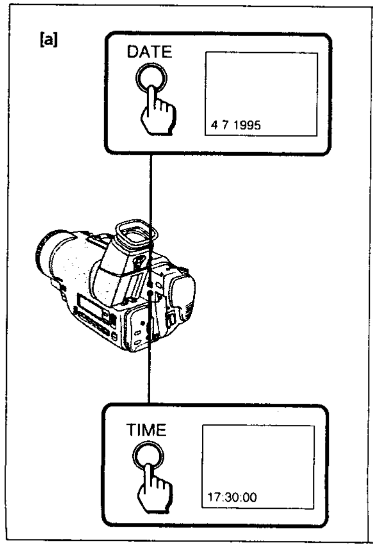
Para visualizar la fecha de la grabación

Presione DATE en la videocámara **[a]** o DATA CODE en el telemando **[b]**. Para que desaparezca la fecha, presione de nuevo una vez DATE o DATA CODE dos veces.

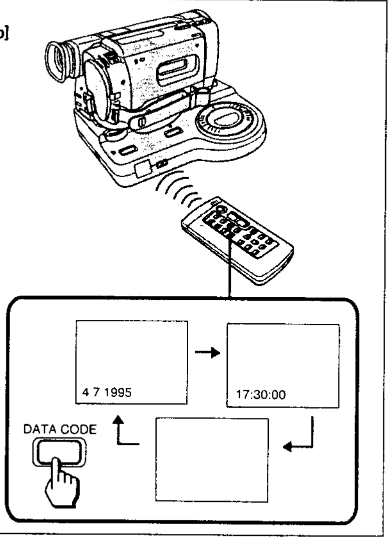
Para visualizar la hora de la grabación

Presione TIME de la videocámara **[a]**, o presione dos veces DATA CODE del telemando **[b]**. Para hacer que desaparezca la hora, presione de nuevo uno de estos botones.

[a]



[b]



When bars (--:--:--) appear

- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without the Data Code function.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.
- The tape was recorded in LP mode.
- The tape is being played back in variable speed (Slow Playback, etc.)
- An index signal is marked, the RC time code is written, or PCM after recording is made on the tape.

Cuando aparezcan barras (--:--:--):

- Se está reproduciendo una parte en blanco de la cinta.
- La cinta fue grabada por una videocámara sin función de código de datos.
- La cinta fue grabada por una videocámara en la que no se ajustó la fecha ni la hora.
- La cinta no se puede leer debido a que está estropeada o tiene ruidos.
- La cinta fue grabada en el modo LP.
- La cinta está siendo reproducida a velocidad variable (reproducción lenta, etc.)
- En la cinta está marcada una señal índice, está escrito el código de tiempo RC o se ha hecho PCM después de la grabación.

Searching for the End of the Picture

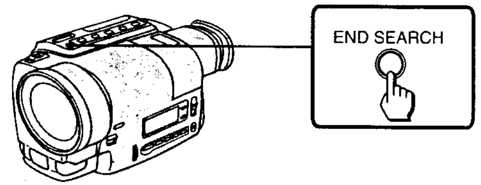
You can go to the end of the recorded portion after you record and play back the tape to make the transition between the last scene you recorded and the next scene smooth. The tape starts rewinding or fast-forwarding and the last 5 seconds of the recorded portion plays back. Then the tape stops at the end of the recorded picture (**End Search**).
Note that End Search function does not work once you eject the cassette after you recorded in the tape.

Press END SEARCH.
This function works when the POWER switch is set to either CAMERA or PLAYER.

Búsqueda del final de la imagen

Podrá ir al final de la parte grabada después de grabar y reproducir la cinta para hacer una transición suave entre la última escena que grabó y la siguiente escena. La cinta empieza a rebobinarse o a avanzar rápidamente y los últimos 5 segundos de la parte grabada se reproducen. Luego, la cinta se para al final de la imagen grabada (**búsqueda del final**).
Tenga en cuenta que la función de búsqueda del final no se activará una vez que haya expulsado el videocasete después de haber grabado la cinta.

Presione END SEARCH.
Esta función se activará cuando el conmutador POWER esté en CAMERA o PLAYER.



Using Alternative Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 7), the mains, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	The mains	AC power adaptor AC-V515 (supplied)
		Handycam Station HSA-V515 (supplied)*
Outdoors	Battery pack	Battery pack NP-520 (supplied), NP-500H, NP-720**
In the car	12 V or 24 V car battery	Car battery charger DC-V515

* Handycam Station HSA-V515 cannot be used for camera recording.

** Battery pack NP-720 can be used only with the NPA-L1 battery adaptor (not supplied).

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the Mains

To use the supplied AC-V515 AC power adaptor:

(1) Connect the mains lead to mains, then connect the connecting cord to the DC OUT jack on the AC power adaptor.

(2) Insert the connecting plate into the guides at the bottom of the camcorder.

Empleo de fuentes de alimentación alternativas

Podrá elegir cualquiera de las fuentes de alimentación siguientes para su videocámara: batería (página 7), corriente del hogar y batería de automóvil de 12/24 V. Elija la fuente de alimentación apropiada según el lugar donde vaya a emplear la videocámara.

Lugar	Alimentación	Accesorios para emplear
Interiores	Corriente del hogar	Adaptador de alimentación de CA AC-V515 (suministrado)
		Estación Handycam HSA-V515 (suministrada)*
Exteriores	Batería	Batería NP-520 (suministrada), NP-500H, NP-720**
En un automóvil	Batería de automóvil de 12 V o 24 V	Cargador DC-V515 para emplear con baterías de automóvil

* La estación Handycam HSA-V515 no se puede emplear para hacer la grabación con videocámara.

** La batería NP-720 sólo se puede emplear con el adaptador de batería NPA-L1 (no suministrado).

Nota sobre las fuentes de alimentación

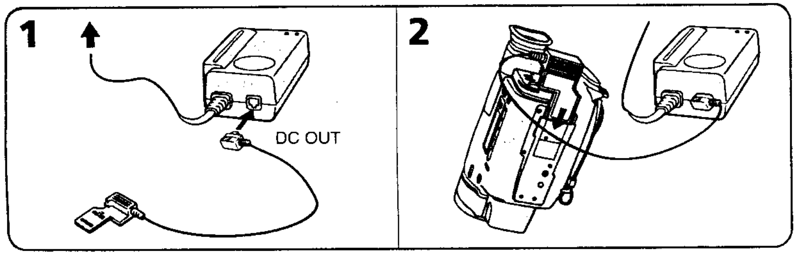
La desconexión de la fuente de alimentación o la extracción de la batería durante la grabación o la reproducción podría estropear la cinta introducida. Si pasa esto, reponga inmediatamente el suministro de alimentación.

Empleo de la corriente del hogar

Para emplear el adaptador de alimentación de CA AC-V515 suministrado:

(1) Conecte el cable de alimentación a una toma de corriente, luego conecte el cable de conexión a la toma DC OUT del adaptador de alimentación de CA.

(2) Introduzca la placa de conexión en las guías de la parte inferior de la videocámara.



You can charge the battery pack installed in the camcorder by connecting the AC power adaptor to the camcorder and setting the POWER switch to OFF. The CHARGE lamp lights up, and goes out when charging is completed. Charging time of the supplied NP-520 battery pack is approx. 2 hours and 30 minutes.

To remove the connecting plate

Pull out the connecting plate by the plate. Never pull the connecting cord itself.

WARNING

Mains lead must only be changed at qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Installing the Battery Pack at the Bottom of the Camcorder

You can install the battery pack at the bottom of the camcorder with the NPA-L1 battery adaptor (not supplied). If you install another battery pack into the camcorder, you can use the camcorder for a long time.

(1) Attach the battery pack to the battery adaptor until it clicks.

(2) Aligning the bottom of the battery adaptor with the guide at the bottom of the camcorder, slide the battery adaptor until it clicks.

Podrá cargar la batería instalada en la videocámara conectando el adaptador de alimentación de CA a la videocámara y poniendo el conmutador POWER en OFF. La lámpara CHARGE se encenderá, y se apagará una vez completada la carga. El tiempo de carga de la batería NP-520 suministrada es de 2 horas y 30 minutos aproximadamente.

Para retirar la placa de conexión

Saque la placa de conexión tirando de ella. Nunca tire del propio cable de conexión.

AVISO

El cable de alimentación sólo deberá ser cambiado en un taller de reparaciones cualificado.

PRECAUCIÓN

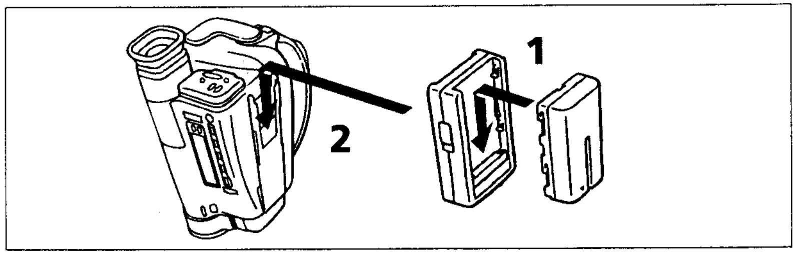
El grupo no estará desconectado de la fuente de alimentación de CA (red) siempre y cuando esté conectado a la toma de corriente, a pesar de que lo haya apagado.

Instalación de la batería en la parte inferior de la videocámara

Podrá instalar la batería en la parte inferior de la videocámara con el adaptador de batería NPA-L1 (no suministrado). Si instala otra batería en la videocámara, podrá emplear la videocámara durante mucho tiempo.

(1) Ponga la batería en el adaptador de batería hasta que haga un ruido seco.

(2) Alineando la parte inferior del adaptador de batería con la guía de la parte inferior de la videocámara, deslice el adaptador de batería hasta que haga un ruido seco.



See the next page for further information.

Vea la página siguiente para más información.

Using Alternative Power Sources

Battery life of NP-720
The typical recording time of the NP-720 battery pack (not supplied) is approx. 1 hour and 10 minutes, and the continuous recording time is approx. 2 hours and 20 minutes. The actual battery life may be shorter.

To Remove the Battery Pack

(1) While sliding RELEASE on the battery adaptor, detach it from the camcorder.
(2) While sliding BATT. RELEASE on the battery adaptor, remove the battery pack from the adaptor.

When the battery pack is discharged
Set the POWER switch on the camcorder to OFF, and replace the battery pack. If another battery pack is installed in the camcorder, replace both of them at the same time.

Notes on the battery adaptor

- The camcorder is unstable if a battery adaptor is attached on it. Put the camcorder on its side or remove the battery adaptor.
- If you attach the battery pack while recording, recording stops and the camcorder switches to standby mode. Press START/STOP to continue recording. The transition between two scenes will be smooth.

Using a Car Battery

Use the DC-V515 car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Connect the car battery charger and the camcorder using the supplied connecting cord.

GENUINE VIDEO ACCY

This mark indicates that this product is a genuine product related to our 8 mm video equipment.
We recommend that you purchase related 8 mm video products provided with the same mark or products provided with our logotype mark.

Empleo de fuentes de alimentación alternativas

Duración de la batería NP-720
El tiempo de grabación típico con una batería NP-720 (no suministrada) es de 1 hora y 10 minutos aproximadamente, y el tiempo de grabación continua es de 2 horas y 20 minutos aproximadamente. La duración real de la batería puede ser más corta.

Para retirar la batería

(1) Mientras desliza RELEASE del adaptador de batería, sepárelo de la videocámara.
(2) Mientras desliza BATT. RELEASE del adaptador de la batería, quite la batería del adaptador.

Cuando la batería esté descargada
Ponga el conmutador POWER de la videocámara en OFF y reemplace la batería. Si hay otra batería instalada en la videocámara, reemplace ambas al mismo tiempo.

Notas sobre el adaptador de batería

- La videocámara estará inestable si se coloca en ella un adaptador de batería. Ponga la videocámara apoyada en su costado o retire el adaptador de batería.
- Si coloca la batería mientras graba, la grabación se parará y la videocámara se pondrá en el modo de espera. Presione START/STOP para continuar grabando. La transición entre dos escenas será suave.

Empleo de una batería de automóvil

Emplee el cargador de batería de automóvil DC-V515 (no suministrado). Conecte el cable procedente de la batería del automóvil al receptáculo del encendedor de cigarrillos de un automóvil (12 V o 24 V). Conecte el cargador de batería de automóvil y la videocámara empleando el cable de conexión suministrado.

GENUINE VIDEO ACCY

Esta marca indica que este producto es genuino y está relacionado con nuestro equipo de vídeo de 8mm.
A la hora de adquirir nuestro equipo de vídeo de 8mm, recomendamos elegir los productos de vídeo relacionados de 8mm que dispongan de esta marca u otros con nuestro logotipo.

Changing the Mode Settings

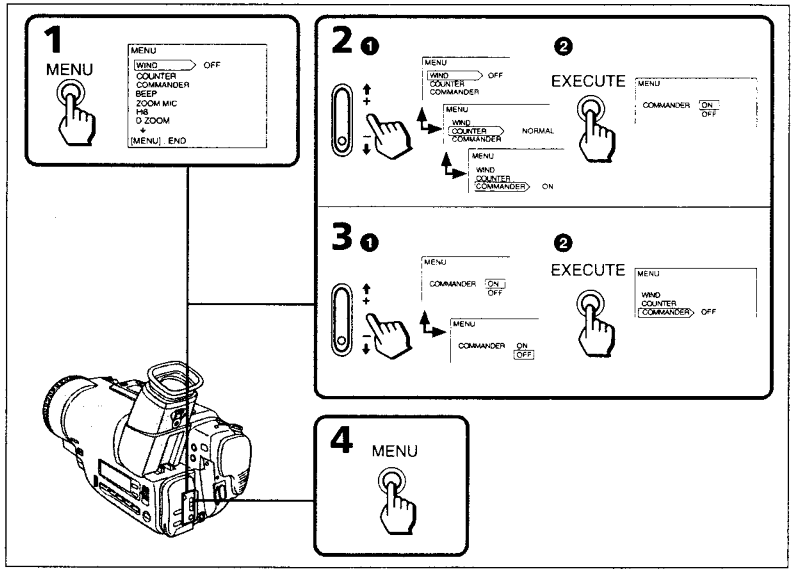
You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu in the viewfinder.
(2) Press ↑ (+) or ↓ (–) to select the desired item, then press EXECUTE.
(3) Press ↑ (+) or ↓ (–) to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3.
(4) Press MENU to erase the menu display.

Cambio de los ajustes de modo

Podrá cambiar los ajustes de modo en el sistema de menú para disfrutar aún más de las características y funciones de la videocámara.

(1) Presione MENU para visualizar el menú en el visor.
(2) Presione ↑ (+) o ↓ (–) para seleccionar el ítem deseado, y luego presione EXECUTE.
(3) Presione ↑ (+) o ↓ (–) para ajustar el modo deseado, y luego presione EXECUTE. Si desea cambiar los otros modos, repita los pasos 2 y 3.
(4) Presione MENU para borrar la visualización del menú.



Selecting the Mode Setting of Each Item

Items for both CAMERA and PLAYER Modes

COUNTER <NORMAL/TIME CODE>

- Normally select NORMAL.
- Select TIME CODE to display the RC time code in order to edit more precisely.

See the next page for further information.

Selección del ajuste de modo de cada ítem

Ítemes para los modos CAMERA y PLAYER

COUNTER <NORMAL/TIME CODE>

- Normalmente, seleccione NORMAL.
- Seleccione TIME CODE para visualizar el código de tiempo RC para editar con mayor precisión.

Vea la página siguiente para más información.

Changing the Mode Settings

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

BEEP <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

Hi8 <AUTO/OFF>
- Normally select AUTO to have the camcorder automatically set the recording mode (Hi8 or standard 8 mm) depending upon the cassette type being used.
- Select OFF to record a Hi8 tape in standard 8 mm format.

VF BRIGHT*
Select this item to adjust the brightness of the viewfinder. The viewfinder becomes brighter when you press ▲ (+), and darker when you press ▼ (–).

Items for CAMERA Mode only

WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

ZOOM MIC <ON/OFF>
- Select ON when recording the sound "zoom" along with the picture.
- Select OFF when recording the usual Hi-Fi stereo sound regardless of zooming.

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming. More than 16x zoom is performed digitally.
- Normally select OFF.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

AE SHIFT*
Select this item to adjust the brightness of the picture.

CLOCK SET*
Select this item to reset the date or time.

Cambio de los ajustes de modo

COMMANDER <ON/OFF>
- Seleccione ON cuando emplee el telemando suministrado con la videocámara.
- Seleccione OFF cuando no emplee el telemando.

BEEP <ON/OFF>
- Seleccione ON para que suenen pitidos cuando inicie/pare la grabación, etc.
- Seleccione OFF cuando no desee oír los pitidos.

Hi8 <AUTO/OFF>
- Seleccione normalmente AUTO para que la videocámara ajuste automáticamente el modo de grabación (Hi8 o estándar de 8 mm) según el videocasete que esté siendo empleado.
- Seleccione OFF para grabar una cinta Hi8 en el formato de 8 mm estándar.

VF BRIGHT*
Seleccione este ítem para ajustar el brillo del visor. El visor quedará más brillante cuando presione ▲ (+), y más oscuro cuando presione ▼ (–).

Ítemes para el modo CAMERA solamente

WIND <ON/OFF>
- Seleccione ON para reducir el ruido del viento cuando grabe con viento fuerte.
- Normalmente, seleccione OFF.

ZOOM MIC <ON/OFF>
- Seleccione ON cuando grabe el sonido "zoom" junto con la imagen.
- Seleccione OFF cuando grabe el sonido estéreo Hi-Fi normal sin tener en cuenta el efecto zoom.

D ZOOM* <ON/OFF>
- Seleccione ON para activar el zoom digital. El zoom de más de 16x se realiza digitalmente.
- Normalmente, seleccione OFF.

REC LAMP* <ON/OFF>
- Seleccione OFF cuando no desee que se encienda la lámpara de grabación con videocámara/estado de la batería en la parte delantera de la unidad.
- Normalmente, seleccione ON.

AE SHIFT*
Seleccione este ítem para ajustar el brillo de la imagen.

CLOCK SET*
Seleccione este ítem para reponer la fecha o la hora.

Items for PLAYER Mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

HiFi SND <STEREO/1/2>
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Ítemes para el modo PLAYER solamente

EDIT <ON/OFF>
- Seleccione ON para minimizar la distorsión de la imagen cuando edite.
- Normalmente, seleccione OFF.

HiFi SND <STEREO/1/2>
- Normalmente, seleccione STEREO.
- Seleccione 1 ó 2 para reproducir una cinta con doble pista de sonido.

* Estos ajustes se retienen incluso cuando se retira la batería, siempre que esté instalada la pila de litio.

Fade-in and Fade-out

Using the Fading Effect

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases.
When fading out, the picture gradually fades to black or mosaic while the sound decreases.

See the next page for further information.

Aparición gradual y desvanecimiento

Empleo del efecto de aparición gradual y desvanecimiento

Podrá emplear la aparición gradual y el desvanecimiento para dar a sus grabaciones una apariencia profesional.
Cuando haga la aparición gradual, la imagen aparecerá gradualmente desde negro o mosaico mientras aumenta el sonido. Cuando haga el desvanecimiento, la imagen se desvanecerá gradualmente a negro o mosaico mientras disminuye el sonido.

Vea la página siguiente para más información.

Fade-in and Fade-out

When Fading in [a]

(1) While the camcorder is in Standby mode, press FADER/OVERLAP. The fade indicator starts flashing.

(2) Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER/OVERLAP. The fade indicator starts flashing.

(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

Aparición gradual y desvanecimiento

Para la aparición gradual [a]

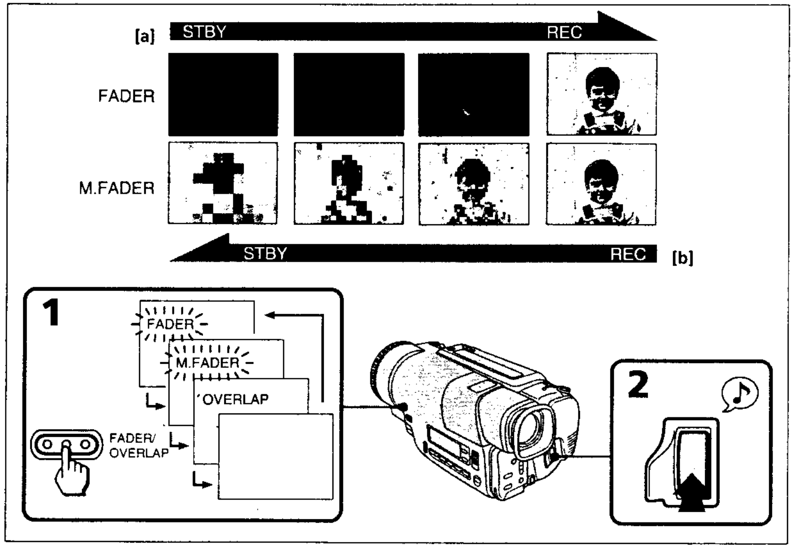
(1) Mientras la videocámara está en el modo de espera, presione FADER/OVERLAP. El indicador de aparición gradual y desvanecimiento empezará a parpadear.

(2) Presione START/STOP para iniciar la grabación. El indicador de aparición gradual y desvanecimiento dejará de parpadear.

Para el desvanecimiento [b]

(1) Durante la grabación, presione FADER/OVERLAP. El indicador de aparición gradual y desvanecimiento empezará a parpadear.

(2) Presione START/STOP para detener la grabación. El indicador de aparición gradual y desvanecimiento dejará de parpadear y la grabación parará.



To Cancel the Fade-in/Fade-out Function

Before pressing START/STOP, press FADER/OVERLAP until the fade indicator disappears.

When the date or time indicator is displayed

The date or time indicator does not fade in nor fade out.

Para cancelar la función de aparición gradual/desvanecimiento

Antes de presionar START/STOP, presione FADER/OVERLAP hasta que desaparezca el indicador de aparición gradual y desvanecimiento.

Cuando se visualice el indicador de la fecha o la hora

El indicador de la fecha o la hora no aparecerá gradualmente ni se desvanecerá.

Overlapping Two Pictures

When you switch from one scene to another, you can overlap the two pictures. With this function, the first scene turns to the second one gradually. You can hear the sound of the second scene gradually as you start recording the second scene.

(1) While the camcorder is in Standby mode, press FADER/OVERLAP repeatedly so that the OVERLAP indicator appears in the viewfinder.

(2) Press START/STOP to record the next scene. The OVERLAP indicator disappears after the overlapping.

You can also select overlap during recording.

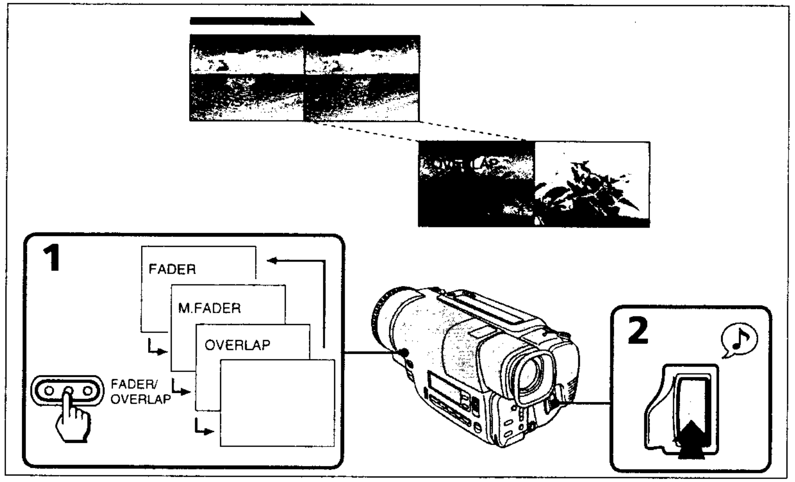
Superposición de dos imágenes

Cuando cambie de una escena a otra podrá superponer las dos imágenes. Con esta función, la primera escena irá cambiando gradualmente a la segunda. Podrá oír gradualmente el sonido de la segunda escena al empezar a grabarla.

(1) Mientras la videocámara está en el modo de espera, presione repetidamente FADER/OVERLAP para que el indicador OVERLAP aparezca en el visor.

(2) Presione START/STOP para grabar la próxima escena. El indicador OVERLAP desaparecerá después de la superposición.

También podrá seleccionar la superposición durante la grabación.



Notes on overlap

- You cannot use the following functions while using the overlap function.
  - Still
  - Flash motion
  - Slow shutter
- You cannot reselect Picture Effect mode while the overlap indicator is displayed.
- The memory of the last recorded scene will be cancelled if:
  - you close the STANDBY cover.
  - you switch the POWER switch.
  - you remove the power source before starting the next recording.

Notas sobre la superposición

- No podrá emplear las funciones siguientes mientras emplee la función de superposición.
  - Imagen fija
  - Movimiento rápido
  - Obturador lento
- Mientras se visualice el indicador de superposición no podrá volver a seleccionar el efecto de imagen.
- La memoria de la última escena grabada se borrará si:
  - Cierra la tapa STANDBY.
  - Manipula el conmutador POWER.
  - Desconecta la fuente de alimentación antes de empezar la siguiente grabación.

Using the Wide Mode Function

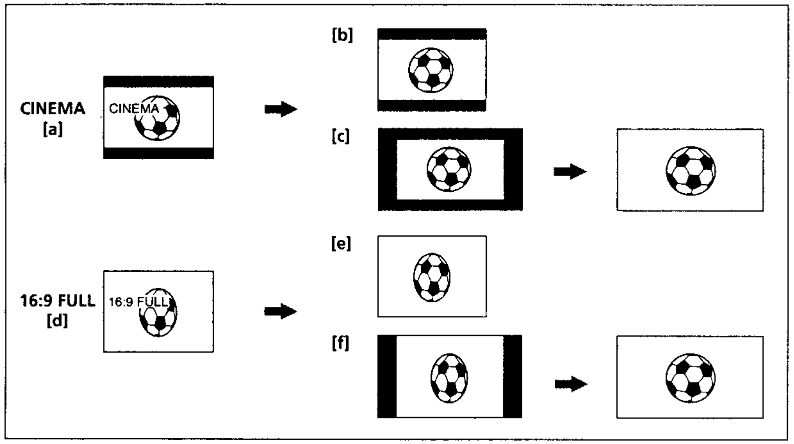
Empleo de la función del modo de pantalla alargada

Selecting the Desired Mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).

Selección del modo deseado

Podrá grabar una imagen como la del cine (CINEMA) o una imagen alargada de 16:9 para verla en un televisor de pantalla alargada de 16:9 (16:9 FULL).



CINEMA
Black bands appear at the top and the bottom of the screen, and the viewfinder **[a]** and a normal TV screen **[b]** look wide. You can also watch the picture without black bands on a wide-screen TV **[c]**.

16:9 FULL
The picture in the viewfinder **[d]** or on a normal TV **[e]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[f]**.

CINEMA
Aparecerán franjas negras en la parte superior e inferior de la pantalla, y las pantallas del visor **[a]** y de un televisor normal **[b]** aparecerán como alargadas. La imagen la podrá ver también sin las franjas negras en un televisor de pantalla alargada **[c]**.

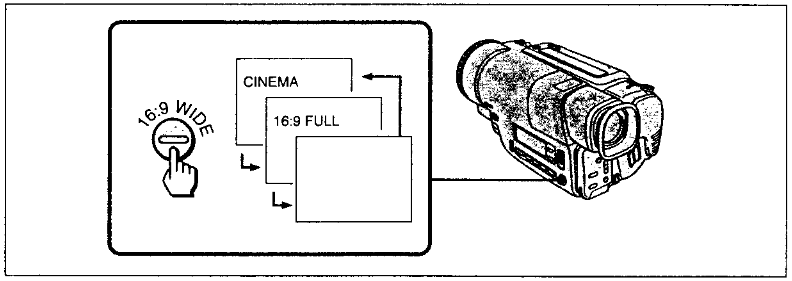
16:9 FULL
La imagen en el visor **[d]** o en un televisor normal **[e]** se comprime horizontalmente. Las imágenes de una grabación normal las podrá ver también en un televisor de pantalla alargada **[f]**.

Using the Wide Mode Function

While the camcorder is in Standby mode, press 16:9 WIDE repeatedly so that the desired mode indicator appears in the viewfinder.

Empleo de la función del modo de pantalla alargada

Mientras la videocámara está en el modo de espera, presione repetidamente 16:9 WIDE para que el indicador del modo deseado aparezca en el visor.



To Cancel Wide Mode

Press 16:9 WIDE repeatedly until the wide mode indicator disappears.

To Watch the Tape Recorded in Wide Mode

To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode

- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is cancelled automatically 5 minutes after you remove the power source.

Para cancelar el modo de pantalla alargada

Presione repetidamente 16:9 WIDE hasta que desaparezca el indicador del modo de pantalla alargada.

Para ver la cinta grabada en el modo de pantalla alargada

Para ver la cinta grabada en el modo CINEMA, ajuste el modo de pantalla del televisor de pantalla alargada al modo zoom. Para ver la cinta grabada en el modo 16:9 FULL, ajústelo al modo de pantalla llena. Para tener detalles, consulte el manual de instrucciones de su televisor.
Tenga en cuanta que la imagen grabada en el modo 16:9 FULL aparecerá comprimida en un televisor normal.

Notas sobre el modo de pantalla alargada

- Cuando grabe en el modo 16:9 FULL, el indicador de la fecha o la hora se alargará en el televisor de pantalla alargada.
- Si copia una cinta, ésta se grabará en el mismo modo que la grabación original.
- El modo de pantalla alargada se cancelará automáticamente 5 minutos después de quitar la fuente de alimentación.

Enjoying Picture Effect

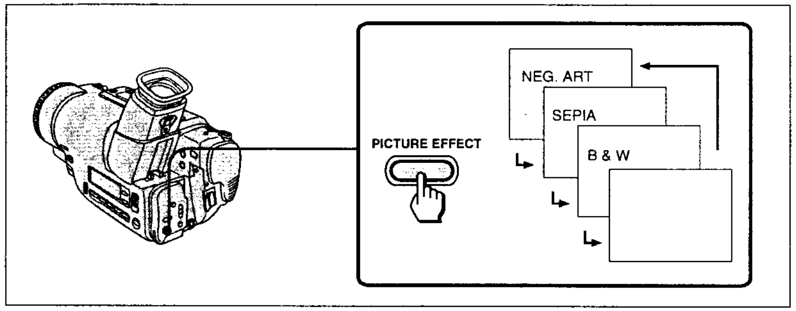
You can make pictures like those of television with the Picture Effect function.

Press PICTURE EFFECT to select the desired Picture Effect mode.

Disfrute de los efectos de imagen

Con la función de efecto de imagen podrá crear imágenes como las de la televisión.

Presione PICTURE EFFECT para seleccionar el modo de efecto de imagen deseado.



NEG. ART
The colour of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

Note on the Picture Effect
When you turn the power off, the camcorder returns automatically to normal mode.

NEG. ART
El color de la imagen se muestra invertido.

SEPIA
La imagen es de color sepia

B&W
La imagen es monocroma (blanco y negro).

Nota sobre el efecto de imagen
Cuando desconecte la alimentación, la videocámara volverá automáticamente al modo normal.

Recording a Still Picture

You can record a still picture like those of still camera while the sound is recorded normally.

(1) Press STILL/FLASH MOTION. The still indicator appears.

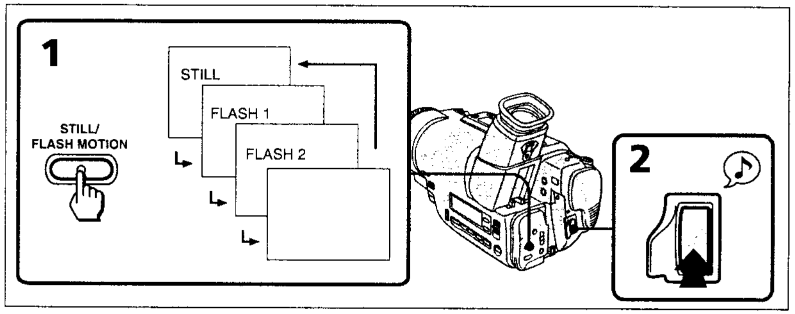
(2) Press START/STOP to start recording a still picture. When you stop recording, press START/STOP again.

Grabación de una imagen fija

Podrá grabar una imagen fija como la de una cámara fotográfica mientras el sonido se graba normalmente.

(1) Presione STILL/FLASH MOTION. El indicador de imagen fija aparecerá.

(2) Presione START/STOP para iniciar la grabación de una imagen fija. Cuando pare la grabación, presione de nuevo START/STOP.



To Cancel Still Mode

Press STILL/FLASH MOTION repeatedly until still or flash motion indicator disappears.

Note on still mode
You cannot use the following functions while recording a still picture.
- Fade-in or fade-out
- Overlap

Para cancelar el modo de imagen fija

Presione repetidamente STILL/FLASH MOTION hasta que desaparezca el indicador de imagen fija o movimiento rápido.

Nota sobre el modo de imagen fija
Mientras graba una imagen fija no podrá emplear las funciones siguientes.
- Aparición gradual o desvanecimiento
- Superposición

Recording Still Pictures Successively

Using the Flash motion function, you can record still pictures successively at constant intervals.
If you select FLASH 1, still pictures are recorded every 0.5 seconds approximately. If you select FLASH 2, they are recorded every 0.15 seconds approximately. The sound is recorded normally during Flash motion.

(1) Press STILL/FLASH MOTION repeatedly until the desired flash motion indicator appears in the viewfinder.

(2) Press START/STOP. Flash motion recording starts. To stop recording, press START/STOP again.

[a] normal recording
[b] flash motion recording

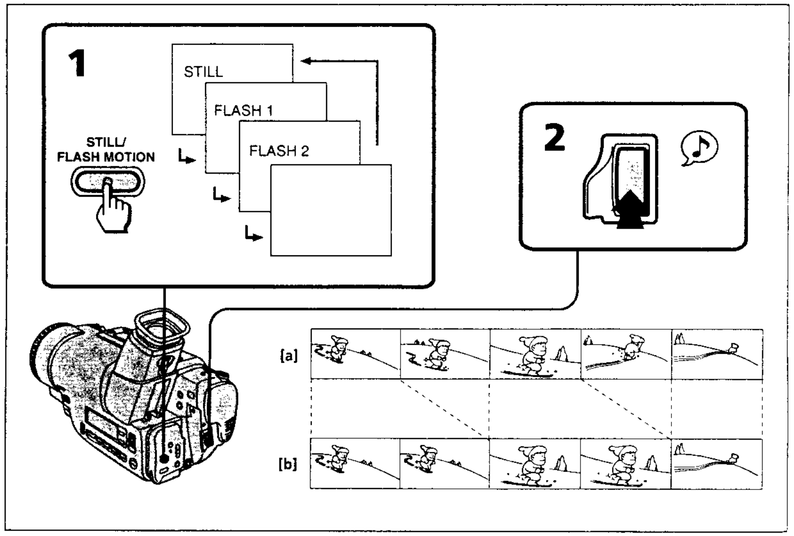
Grabación de imágenes fijas sucesivamente

Empleando la función de movimiento rápido podrá grabar sucesivamente imágenes fijas a intervalos constantes. Si selecciona FLASH 1, las imágenes fijas se grabarán cada 0,5 segundos aproximadamente. Si selecciona FLASH 2, las imágenes fijas se grabarán cada 0,15 segundos aproximadamente. El sonido se grabará normalmente durante el movimiento rápido.

(1) Presione repetidamente STILL/ FLASH MOTION hasta que el indicador de movimiento rápido deseado aparezca en el visor.

(2) Presione START/STOP. Empieza la grabación con movimiento rápido. Para detener la grabación, presione de nuevo START/STOP.

[a] grabación normal
[b] grabación con movimiento rápido



To Cancel the Flash Motion

Press STILL/FLASH MOTION repeatedly until the flash motion indicator disappears.

Note on the flash motion

The following functions does not work during the flash motion.

- Fade-in or fade-out
- Overlap
- Slow shutter

Para cancelar el movimiento rápido

Presione repetidamente STILL/FLASH MOTION hasta que desaparezca el indicador de movimiento rápido.

Nota sobre el movimiento rápido

Durante el movimiento rápido no se activarán las funciones siguientes:

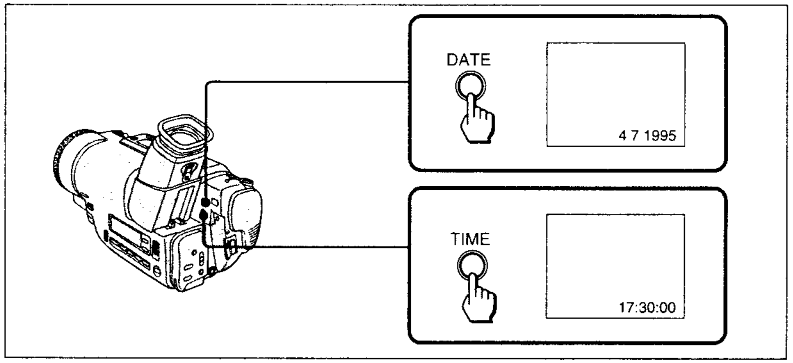
- Aparición gradual o desvanecimiento
- Superposición
- Obturador lento

Recording with the Date or Time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is already set at the factory; to London time for United Kingdom and to Paris time for the other European countries. You can reset the clock in the menu system (p. 74).

Grabación con la fecha o la hora

Antes de empezar a grabar o durante la grabación, presione DATE o TIME. Podrá grabar la fecha o la hora mostrada en el visor junto con la imagen. No podrá grabar la fecha y la hora al mismo tiempo. Exceptuando el indicador de la fecha o la hora, ningún otro indicador del visor se grabará.
El reloj ya ha sido ajustado en fábrica; a la hora de Londres para el Reino Unido y a la de París para los demás países europeos. Podrá reajustar el reloj en el sistema de menú (página 74).



To Stop Recording with the Date or Time

Press DATE or TIME again. The date or time indicator disappears. The recording continues.

Note on the date or time indicator

If you press DATE or TIME while you are recording in CINEMA mode, the indicators in the viewfinder move upwards.

Para detener la grabación con la fecha o la hora

Presione de nuevo DATE o TIME. El indicador de la fecha o la hora desaparecerá. La grabación continuará.

Nota sobre el indicador de la fecha o la hora

Si presiona DATE o TIME mientras graba en el modo CINEMA, los indicadores del visor se moverán hacia arriba.

Re-recording a Picture in the Middle of a Recorded Tape

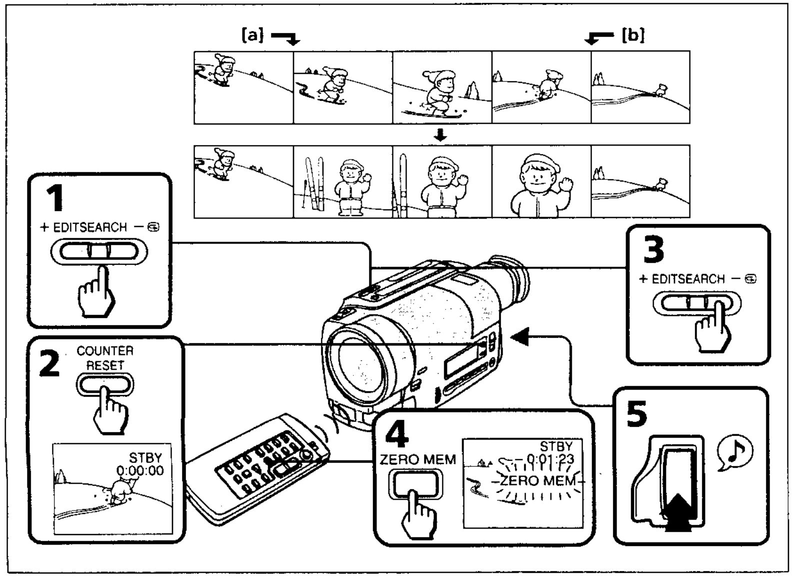
You can insert a scene in the middle of a recorded tape by setting the starting and ending points. The previous recorded portion will be erased. If the RC time code appears in the viewfinder, set COUNTER to NORMAL in the menu system (p. 31) to display the tape counter.

(1) While the camcorder is in standby mode, keep pressing the + (forward playback) or – (reverse playback) side of EDITSEARCH, and release the button where you want to end the insertion **[b]**. The camcorder enters standby mode again.
(2) Press COUNTER RESET. The counter resets to zero.
(3) Keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion **[a]**.
(4) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes.
(5) Press START/STOP to start recording. The recording stops automatically at the counter zero point.

Repetición de grabación de una imagen en medio de una cinta grabada

Podrá introducir una escena en medio de una cinta grabada ajustando los puntos de inicio y finalización. La parte previamente grabada se borrará. Si el código de tiempo RC aparece en el visor, ponga COUNTER en NORMAL en el sistema de menú (página 31) para visualizar el contador de la cinta.

(1) Mientras la videocámara está en el modo de espera, mantenga presionado + (reproducción hacia adelante) o – (reproducción hacia atrás) de EDITSEARCH, y deje de presionar el botón cuando desee finalizar la introducción **[b]**. La videocámara entra de nuevo en el modo de espera.
(2) Presione COUNTER RESET. El contador se repone a cero.
(3) Mantenga presionado el lado – de EDITSEARCH y deje de presionar el botón en el punto donde desee iniciar la introducción **[a]**.
(4) Presione ZERO MEM del telemando. El indicador ZERO MEM parpadeará.
(5) Presione START/STOP para iniciar la grabación. La grabación se detendrá automáticamente cuando el contador muestre el punto cero.



To Change the End Point

Press ZERO MEM to erase the ZERO MEM indicator, then repeat steps 2 to 5.

Note on re-recording

The picture and the sound may be distorted at the end of the inserted portion when it is played back.

Para cambiar el punto de finalización

Presione ZERO MEM para borrar el indicador ZERO MEM y luego repita los pasos 2 a 5.

Nota sobre la repetición de grabación

La imagen y el sonido tal vez se distorsionen al final de la parte introducida cuando ésta sea reproducida.

Releasing the STEADYSHOT Function

When you shoot, the (◎) indicator appears in the viewfinder. This indicates that the SteadyShot function is working and the camcorder compensates for camera-shake.

You can release the SteadyShot function when you do not need to use the SteadyShot function. Do not use the SteadyShot function when shooting a stationary object with a tripod.

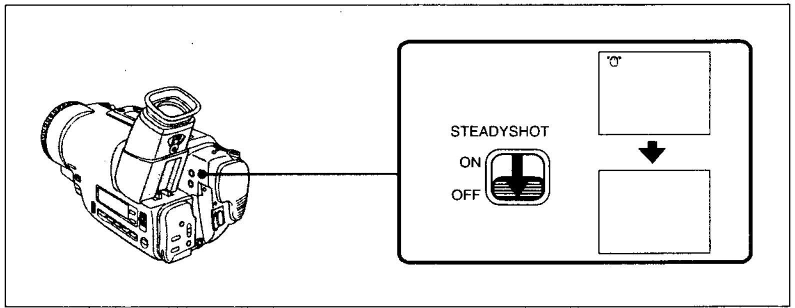
Set STEADYSHOT to OFF.

Cancelación de la función de filmación estable

Cuando filme, el indicador "(◎)" aparecerá en el visor. Esto indicará que la función de filmación estable está funcionando y que la videocámara compensa sus propias vibraciones.

Podrá desactivar la función de filmación estable cuando no la necesite. No emplee esta función cuando filme un objeto estacionario con la videocámara sobre un trípode.

Ponga STEADYSHOT en OFF.



To Activate the SteadyShot Function Again

Set STEADYSHOT to ON.

Note on the SteadyShot function

The SteadyShot function will not correct excessive camera-shake.

Para activar de nuevo la función de filmación estable

Ponga STEADYSHOT en ON.

Nota sobre la función de filmación estable

La función de filmación estable no corregirá las vibraciones excesivas de la videocámara.

English

Selecting Automatic/Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.
You can adjust focus, aperture, shutter speed, gain, and white balance automatically or manually. Also, you can use the PROGRAM AE function in particular circumstances, and adjust the brightness of the picture with the AE shift function.
Here's the overview of each manual adjustment. See the following pages for detailed information.

To Focus Manually

Set FOCUS to MANUAL. You can adjust the focus regardless of the position of the AUTO LOCK switch. When you want to focus automatically, set FOCUS to AUTO.

To Manually Adjust Aperture, Shutter Speed, Gain, and White Balance

Set AUTO LOCK to the centre position. You can adjust each item independently. When you want to adjust each item automatically, set AUTO LOCK to AUTO LOCK.

To Manually Adjust the Brightness

Use AE SHIFT in the menu system.

Note on the previous settings

Once you adjust the settings manually, they are stored in memory in the following cases as long as the lithium battery is in place.

- when you return to automatic adjustment mode.
- when you set the POWER switch to OFF.
- in five minutes after you remove the power source.

	Automatic adjustment	**PROGRAM AE**				**Manual adjustment**
		Automatic (no indication)	**Aperture priority mode**	**Shutter priority mode**	**Twilight mode**	
Aperture	Automatic	Automatic	Manual	Automatically adjusted according to the shutter speed	Automatic	Automatic or Manual
Shutter speed	1/50	1/50	Automatically adjusted according to the aperture	Manual	1/50	1/50 or manual
Gain	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic or manual
White balance	Automatic	Changes each time you press the WHT BAL button Automatic (no indication) → HOLD (hold) → ☀ (outdoor) → 💡 (indoor)				
AE shift*	Effective	Effective	Effective	Effective	Effective	Effective
Focus	Automatic or Manual according to the position of the FOCUS switch					

* You cannot change AE shift while adjusting the aperture manually.

Español

Selección de los modos de ajuste automático/manual

Las funciones automáticas de la videocámara le ofrecen un funcionamiento sin problemas bajo la mayoría de las condiciones de filmación. Pero en algunos casos, el ajuste manual resulta mejor para obtener una grabación original.
Podrá ajustar automática o manualmente el enfoque, la apertura, la velocidad del obturador, la ganancia y el equilibrio del blanco. También podrá emplear la función PROGRAM AE en circunstancias particulares, y ajustar el brillo de la imagen con la función de desplazamiento AE.
A continuación se ofrece un resumen de cada ajuste manual. Consulte las páginas siguientes para obtener una información más detallada.

Para enfocar manualmente

Ponga FOCUS en MANUAL. Podrá ajustar el enfoque sin tener en cuenta la posición del conmutador AUTO LOCK. Cuando desee enfocar automáticamente, ponga FOCUS en AUTO.

Para ajustar manualmente la apertura, la velocidad del obturador, la ganancia y el equilibrio del blanco

Ponga AUTO LOCK en la posición central. Podrá ajustar independientemente cada ítem. Cuando desee ajustar automáticamente cada ítem, ponga AUTO LOCK en AUTO LOCK.

Para ajustar manualmente el brillo

Emplee AE SHIFT en el sistema de menú.

Nota sobre los ajustes anteriores

Una vez hechos los ajustes manualmente, éstos se almacenarán en la memoria en los casos siguientes, siempre que esté instalada la pila de litio.

- cuando vuelva al modo de ajuste automático.
- cuando ponga el conmutador POWER en OFF.
- cinco minutos después de desconectar la fuente de alimentación.

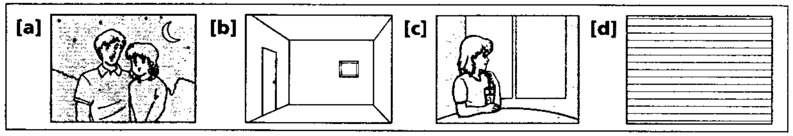
	Ajuste automático	**PROGRAM AE**				**Ajuste manual**
		Modo automático (sin indicación)	**Modo de prioridad de apertura**	**Modo de prioridad del obturador**	**Modo de crepúsculo**	
Apertura	Automático	Automático	Manual	Ajustado automáticamente según la velocidad del obturador	Automático	Automático o manual
Velocidad del obturador	1/50	1/50	Ajustado automáticamente según la apertura	Manual	1/50	1/50 o manual
Ganancia	Automático	Automático	Automático	Automático	Automático	Automático o manual
Equilibrio del blanco	Automático	Cambia cada vez que se presiona el botón WHT BAL Automático (sin indicación) → HOLD (bloqueo) → ☀ (exteriores) → 💡 (interiores)				
Desplazamiento AE*	Eficaz	Eficaz	Eficaz	Eficaz	Eficaz	Eficaz
Enfoque	Automático o manual según la posición del conmutador FOCUS					

* No podrá cambiar el desplazamiento AE mientras ajuste manualmente la apertura.

Focusing Manually

When to Use Manual Focus

In the following cases you should obtain better results by adjusting the focus manually.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The ⓕ indicator appears in the viewfinder.

(2) Move the power zoom lever to the "T" side until the lever reaches the end.

(3) Turn the focus ring to achieve a sharp focus. Be sure to not touch the built-in microphone when you turn the focus ring.

(4) Set the desired shot length using the power zoom lever.

Enfoque manual

Cuándo emplear el enfoque manual

En los casos siguientes obtendrá mejores resultados ajustando manualmente el enfoque.

- Luz insuficiente **[a]**
- Motivos con poco contraste: paredes, el cielo, etc. **[b]**
- Demasiado brillo detrás del motivo **[c]**
- Rayas horizontales **[d]**
- Motivos situados detrás de un vidrio con escarcha
- Motivos situados detrás de redes, etc.
- Motivo brillante o motivo que refleja luz.
- Cuando filme un motivo estacionario empleando un trípode.

Enfoque manual

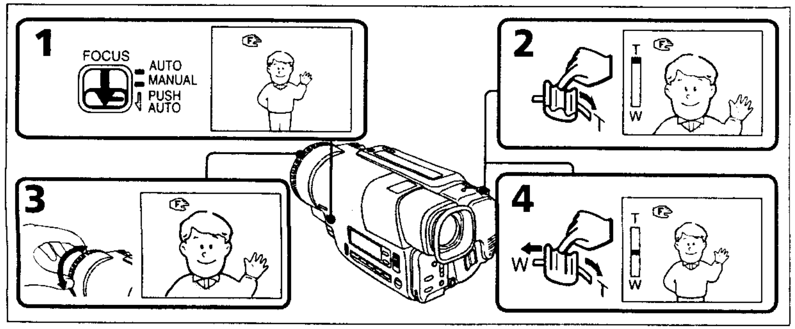
Cuando enfoque manualmente, enfoque primero en telefoto antes de grabar, y luego reajuste la distancia de filmación.

(1) Ponga FOCUS en MANUAL. El indicador ⓕ aparecerá en el visor.

(2) Mueva la palanca del zoom motorizado hacia el lado "T" hasta que la palanca llegue al extremo.

(3) Gire el anillo de enfoque para lograr un enfoque nítido. Asegúrese de no tocar el micrófono incorporado cuando gire el anillo de enfoque.

(4) Ajuste la longitud de filmación deseada empleando la palanca del zoom motorizado.



To Return to Autofocus Mode

Set FOCUS to AUTO. The ⓕ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

Note on the focus ring

The focus ring does not have a stop position.

To Shoot with Autofocus Momentarily

When you want to switch to autofocus momentarily while recording in manual focus mode, push FOCUS down to PUSH AUTO. Autofocus functions while FOCUS is held down. When it is released, manual focus mode will be resumed.

Para volver al modo de enfoque automático

Ponga FOCUS en AUTO. El indicador ⓕ del visor desaparecerá.

Filmación en lugares relativamente oscuros

Filme en granangular después de haber enfocado en telefoto.

Nota sobre el anillo de enfoque

El anillo de enfoque no tiene posición de parada.

Para filmar momentáneamente con enfoque automático

Cuando desee cambiar momentáneamente a enfoque automático mientras graba en el modo de enfoque manual, presione FOCUS hacia abajo para ponerlo en PUSH AUTO. El enfoque automático funcionará mientras FOCUS se mantenga presionado hacia abajo. Cuando deje de presionarlo, el modo de enfoque manual se reanudará.

Using the PROGRAM AE Function

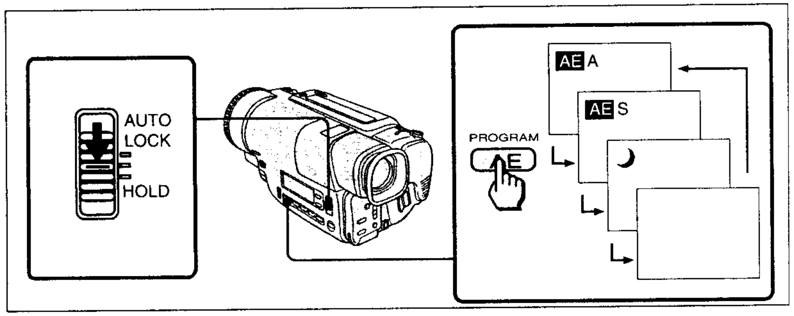
Empleo de la función PROGRAM AE

About the PROGRAM AE Function

You can select from three PROGRAM AE modes to fit the shooting situation. Set AUTO LOCK to the centre position, then select the desired mode by pressing PROGRAM AE. Each time you press the button, the indicator in the viewfinder changes: AE A (Aperture Priority) → AE S (Shutter Priority) → ☽ (Twilight) → No indicator (Automatic), cyclically.

Acerca de la función PROGRAM AE

Podrá seleccionar de entre tres modos PROGRAM AE para elegir el que mejor se ajuste a la situación de filmación. Ponga AUTO LOCK en la posición central, y luego seleccione el modo deseado presionando PROGRAM AE. Cada vez que presione el botón, el indicador del visor cambiará cíclicamente: AE A (prioridad de apertura) → AE S (prioridad del obturador) → ☽ (crepúsculo) → Sin indicador (automático).



Note on recording in PROGRAM AE
We recommend that you adjust the focus and white balance manually.

Nota sobre la grabación en el modo PROGRAM AE
Recomendamos ajustar manualmente el enfoque y el equilibrio del blanco.

Using the Aperture Priority Mode

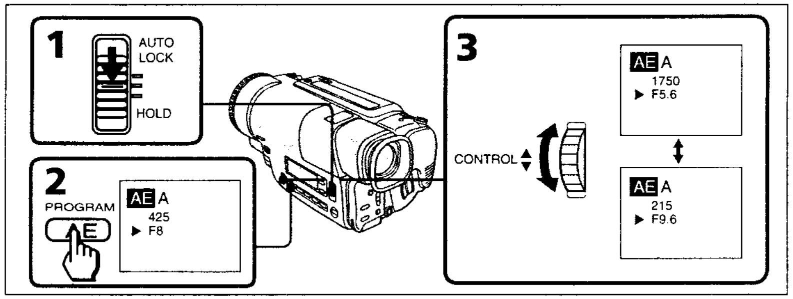
You can select the aperture to determine the desired depth of focus field. The shutter speed is automatically set (between 1/50 and 1/1750) according to the aperture value to maintain appropriate exposure.

(1) Set AUTO LOCK to the centre position.
(2) Press PROGRAM AE so that AE A appears in the viewfinder.
(3) Turn CONTROL to select the desired aperture value. You can select from the following 15 values: F1.6, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9. 6, F11, F14, F16, F19. For a smaller aperture, select a higher value.

Empleo del modo de prioridad de apertura

Podrá seleccionar la apertura para determinar la profundidad de campo de enfoque deseada. La velocidad del obturador se ajustará automáticamente (entre 1/50 y 1/1.750) según el valor de la apertura para mantener la exposición apropiada.

(1) Ponga AUTO LOCK en la posición central.
(2) Presione PROGRAM AE para que AE A aparezca en el visor.
(3) Gire CONTROL para seleccionar el valor de apertura deseado. Podrá seleccionar entre los 15 valores siguientes: F1,6, F2, F2,4, F2,8, F3,4, F4, F4,8, F5,6, F6,8, F8, F9,6, F11, F14, F16, F19. Para una apertura más pequeña, seleccione un valor más alto.



To Return to Automatic Adjustment Mode

Set AUTO LOCK to AUTO LOCK, or press PROGRAM AE repeatedly so that no indicator appears in the viewfinder.

About the depth of focus field

The depth of focus field is the in-focus range measured from the distance behind a subject to the distance in front. The depth of focus field can vary with the aperture value and the focal length. Lowering the F value (larger aperture) reduces the depth of focus field. Raising the F value (smaller aperture) provides a larger depth of focus field. Zooming in telephoto position offers a smaller depth of focus field while the depth of focus field in wide-angle position is greater.

See the next page for further information.

Para volver al modo de ajuste automático

Ponga AUTO LOCK en AUTO LOCK, o presione repetidamente PROGRAM AE para que no aparezca ningún indicador en el visor.

Acerca de la profundidad de campo de enfoque

La profundidad de campo de enfoque es el área en la que los objetos por delante y por detrás del motivo permanecen enfocados. La profundidad de campo de enfoque puede variar dependiendo del valor de apertura y la distancia focal. El valor más pequeño de F (apertura grande) reducirá la profundidad de campo de enfoque. El valor más grande de F (apertura pequeña) proporcionará una profundidad de campo de enfoque grande. El zoom en la posición de telefoto proporcionará una profundidad de campo de enfoque pequeña, mientras que la profundidad de campo de enfoque en la posición de granangulará será grande.

Vea la página siguiente para más información.

Using the Shutter Priority Mode

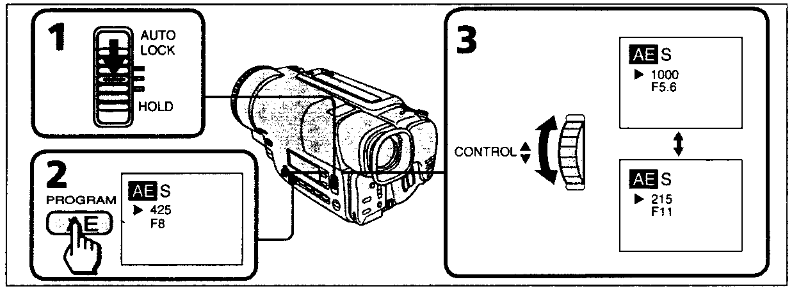
You can select the shutter speed between 1/50 and 1/10000. When you select a faster shutter speed, movement appears clearer with less shaking. The aperture value is automatically adjusted according to the selected shutter speed to maintain appropriate exposure. This mode is most effective when you shoot the picture with high-speed movement.
Note that the shutter speed is indicated in the viewfinder as, for example, "100" for 1/100 shutter speed.

(1) Set AUTO LOCK to the centre position.
(2) Press PROGRAM AE repeatedly so that AE S appears in the viewfinder.
(3) Turn CONTROL to select the desired shutter speed. You can select from the following 16 speeds: 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000. For a faster shutter speed, select a larger value indicator in the viewfinder.

Empleo del modo de prioridad del obturador

Podrá seleccionar una velocidad de obturador de entre 1/50 y 1/10.000. Cuando seleccione una velocidad de obturador más rápida, el movimiento aparecerá más claro con menos vibración. El valor de apertura se ajustará automáticamente según la velocidad del obturador seleccionada para mantener la exposición apropiada. Este modo será el más eficaz cuando filme imágenes que se muevan a alta velocidad.
Tenga en cuenta que la velocidad del obturador se indicará en el visor de la forma siguiente: "100" para 1/100, etc.

(1) Ponga AUTO LOCK hasta la posición central.
(2) Presione repetidamente PROGRAM AE para que AE S aparezca en el visor.
(3) Gire CONTROL para seleccionar la velocidad del obturador deseada. Podrá seleccionar entre las 16 velocidades siguientes: 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1.000, 1/1.250, 1/1.750, 1/2.500, 1/3.500, 1/6.000, 1/10.000. Para seleccionar una velocidad del obturador más alta, seleccione un valor más grande en el visor.



To Return to Automatic Adjustment Mode

Set AUTO LOCK to AUTO LOCK, or press PROGRAM AE repeatedly so that no indicator appears in the viewfinder.

When the aperture value is automatically adjusted to F1.6
We recommend shooting in sunlight or using a video light (not supplied).

When shooting a very bright subject
A vertical band (smear) may appear on the screen if the shutter speed is set too high.

Para volver al modo de ajuste automático

Ponga AUTO LOCK en AUTO LOCK, o presione repetidamente PROGRAM AE para que no aparezca ningún indicador en el visor.

Cuando el valor de la apertura se ajuste automáticamente a F1,6
Recomendamos filmar con luz del sol o empleando una videolámpara (no suministrada).

Cuando filme un motivo muy brillante
Si se ajusta una velocidad de obturador demasiado alta tal vez aparezca una franja vertical (borrosidad) en la pantalla.

To Select the Best Shutter Speed

Subject	Shutter speed
• A golf swing or tennis match in fine weather (to view the hit ball clearly in still picture mode, set to 1/1000 to 1/3500)	1/600 – 1/10000
• A landscape shot from a moving car • A moving roller coaster in overcast days • An athletic scene, marathon, etc.	1/120 – 1/425
• Indoor sports • Replacement for the ND2 filter (to halve the exposure) • Recording pictures with less flicker under a fluorescent lamp	1/100
• In sunny weather (to avoid an out-of-focus picture due to a small aperture)	1/75

Para seleccionar la mejor velocidad del obturador

Motivo	Velocidad del obturador
• Un golpe de golf o un partido de tenis con tiempo muy bueno (para ver claramente el golpe dado a la pelota en el modo de imagen fija, ajuste una velocidad de entre 1/1.000 y 1/3.500)	1/600 – 1/10.000
• Una filmación de un paisaje desde un automóvil en movimiento • Una montaña rusa en movimiento en días cubiertos • Una escena de atletismo, maratón, etc.	1/120 – 1/425
• Deportes en interiores • Reemplazo para el filtro ND2 (para reducir la exposición a la mitad) • Para grabar imágenes con menos fluctuación bajo una lámpara fluorescente	1/100
• En clima soleado (para evitar una imagen desenfocada debido a una apertura pequeña)	1/75

Using the Twilight Mode

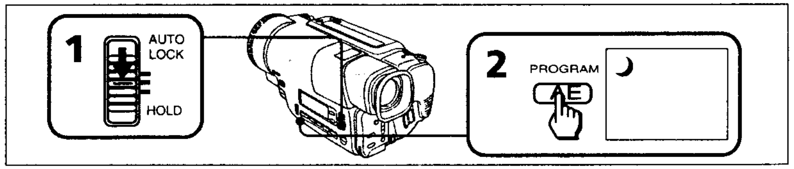
You can record a bright subject in a dark place without ruining the atmosphere. The aperture is automatically adjusted to maintain the appropriate exposure. The shutter speed is fixed at 1/50. This mode is effective when you record night views, neon signs or fireworks.

(1) Set AUTO LOCK to the centre position.
(2) Press PROGRAM AE repeatedly so that the ☽ indicator appears in the viewfinder.

Empleo del modo de crepúsculo

Podrá grabar un motivo brillante en un lugar oscuro sin estropear el ambiente. La apertura se ajustará automáticamente para mantener la exposición apropiada. La velocidad del obturador se fijará a 1/50. Este modo es eficaz cuando grabe escenas nocturnas, letreros de neón o fuegos artificiales.

(1) Ponga AUTO LOCK en la posición central.
(2) Presione repetidamente PROGRAM AE para que el indicador ☽ aparezca en el visor.



To Return to Automatic Adjustment Mode

Set AUTO LOCK to AUTO LOCK, or press PROGRAM AE so that no indicator appears in the viewfinder.

When shooting an excessively bright subject
Autofocus may not work effectively. Focus manually then.

Para volver al modo de ajuste automático

Ponga AUTO LOCK en AUTO LOCK, o presione PROGRAM AE para que no aparezca ningún indicador en el visor.

Cuando filme un motivo excesivamente brillante
El enfoque automático tal vez no funcione eficazmente. Enfoque manualmente.

Using Manual Mode

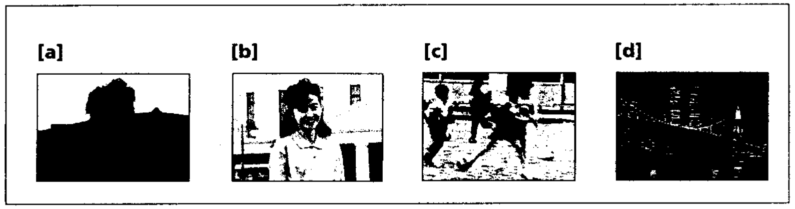
Empleo del modo manual

The manual mode features an advanced recording technique by controlling the exposure with a combination of adjustments of the aperture value, shutter speed and gain level.

El modo manual dispone de una técnica de grabación avanzada que controla la exposición con una combinación de ajustes del valor de la apertura, la velocidad del obturador y el nivel de ganancia.

When to Use Manual Mode

Cuándo emplear el modo manual



- When the background is too bright (backlighting) **[a]**, open the aperture (lower F value).
- When the subject is bright with dark background **[b]**, close the aperture (higher F value).
- When the subject moves at high speed **[c]**, set the shutter speed value faster.
- When a dark scene is shot overexposed **[d]**, lower the gain.

- Cuando el fondo esté demasiado brillante (iluminación de fondo) **[a]**, abra la apertura (valor F más bajo).
- Cuando el motivo esté brillante con fondo oscuro **[b]**, cierre la apertura (valor F más alto).
- Cuando el motivo se mueva a alta velocidad **[c]**, ajuste una velocidad del obturador mayor.
- Cuando la imagen esté brillante mientras grabe una escena oscura **[d]**, disminuya la ganancia.

Item	**Selectable steps**	**Variation of exposure**	**Brighter ↕ Darker**
Aperture	16 steps	0.5 EV /step	F1.6 ↕ F19 (CLOSE)
Shutter speed	Fast: 16 steps	0.5 EV /step	1/50 ↕ 1/10000
	Slow: 4 steps	1.0 EV /step	1/3 ↕ 1/25
Gain	8 steps	0.5 EV /step	+18 dB ↕ –3 dB

Ítem	**Pasos seleccionables**	**Variación de exposición**	**Más brillante ↕ Más oscuro**
Apertura	16 pasos	0,5 EV/ paso	F1,6 ↕ F19 (CLOSE)
Velocidad del obturador	Rápida: 16 pasos	0,5 EV/ paso	1/50 ↕ 1/10000
	Lenta: 4 pasos	1,0 EV/ paso	1/3 ↕ 1/25
Ganancia	8 pasos	0,5 EV/ paso	+18 dB ↕ –3 dB

Note on recording in manual mode

We recommend that you adjust the focus and white balance manually.

Nota sobre la grabación en el modo manual

Le recomendamos ajustar manualmente el enfoque y el equilibrio del blanco.

Shooting in Manual Mode

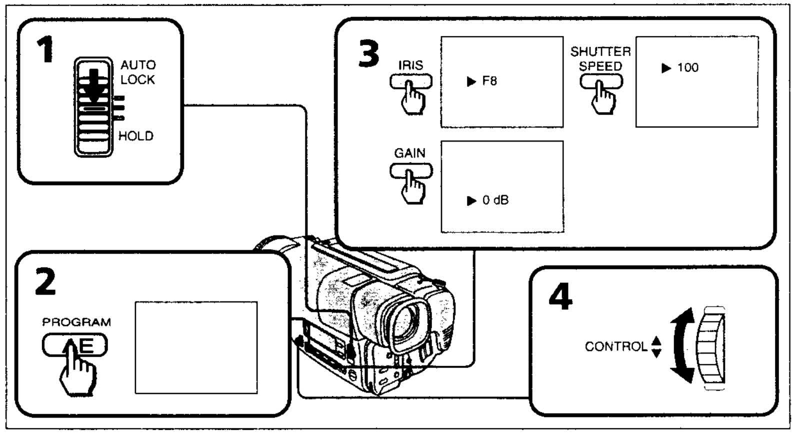
In manual mode, you can adjust the aperture, shutter speed and gain independently. Use the graph on page 56 for your reference to set a value of each item.

(1) Set AUTO LOCK to the centre position.
(2) If any of the PROGRAM AE indicators is displayed, press PROGRAM AE repeatedly so that no indicator appears in the viewfinder.
(3) Press the button of the item you want to adjust (IRIS, SHUTTER SPEED, or GAIN). The ▶ indicator and the automatically adjusted value appear in the viewfinder, and the ⬍ indicator appears in the display window.
(4) Turn CONTROL to adjust the selected item.

Filmación en el modo manual

En el modo manual podrá ajustar independientemente la apertura, la velocidad del obturador y la ganancia. Emplee el gráfico de la página 56 para usarlo como referencia para ajustar el valor de cada ítem.

(1) Ponga AUTO LOCK en la posición central.
(2) Si se visualiza uno cualquiera de los indicadores PROGRAM AE, presione repetidamente PROGRAM AE para que no aparezca ningún indicador en el visor.
(3) Presione el botón del ítem que desee ajustar (IRIS, SHUTTER SPEED o GAIN). El indicador ▶ y el valor ajustado automáticamente aparecerán en el visor, y el indicador ⬍ aparecerá en el visualizador.
(4) Gire CONTROL para ajustar el ítem seleccionado.



Adjustment of Each Item

To adjust the aperture

You can select the aperture from the following 16 values: F1.6, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14, F16, F19, CLOSE. To open the aperture (larger aperture), select a lower value.

Ajuste de cada ítem

Para ajustar la apertura

Podrá seleccionar la apertura de entre los 16 valores siguientes: F1,6, F2, F2,4, F2,8, F3,4, F4, F4,8, F5,6, F6,8, F8, F9,6, F11, F14, F16, F19, CLOSE. Para abrir la apertura (apertura más grande), seleccione un valor más pequeño.

See the next page for further information.

Vea la página siguiente para más información.

To adjust the shutter speed

You can select the shutter speed from the following 20 speeds: 1/3, 1/6, 1/12, 1/25, 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000. To increase the shutter speed, select a smaller setting (larger value indicator in the viewfinder).

To adjust the gain

You can select the gain from the following 8 levels: –3 dB, 0 dB, +3 dB, +6 dB, +9 dB, +12 dB, +15 dB, +18 dB. To increase the gain to brighten the picture, select a higher level.
If you adjusted the aperture manually prior to adjusting the gain, the gain level is set according to the aperture setting.

To Change the Setting

Press the button of the item you want to change so that the ▶ indicator appears in the viewfinder at the side of the selected item. Turn CONTROL to change to the desired setting.

To Lock the Manual Settings

After adjusting the setting, set AUTO LOCK to HOLD. The IRIS, SHUTTER SPEED, GAIN, WHT BAL buttons and the CONTROL dial do not work.

To Return to Automatic Adjustment Mode

Press the button of the item you want to return to automatic adjustment mode so that the ▶ indicator appears in the viewfinder at the side of the selected item, then press the same button again. To return all the items to automatic mode, set AUTO LOCK to AUTO LOCK.

Note on gain level

When you select a gain level that is too high, the picture may be distorted.

Para ajustar la velocidad del obturador

Podrá seleccionar una velocidad del obturador de entre las 20 velocidades siguientes: 1/3, 1/6, 1/12, 1/25, 1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1.000, 1/1.250, 1/1.750, 1/2.500, 1/3.500, 1/6.000, 1/10.000. Para aumentar la velocidad del obturador, seleccione un ajuste más pequeño (indicador de valor más grande en el visor).

Para ajustar la ganancia

Podrá seleccionar la ganancia de entre los 8 niveles siguientes: –3 dB, 0 dB, +3 dB, +6 dB, +9 dB, +12 dB, +15 dB, +18 dB. Para aumentar la ganancia y dar brillo a la imagen, seleccione un nivel más alto.
Si ajusta manualmente la apertura antes de ajustar la ganancia, el nivel de ganancia se ajustará según el ajuste de la apertura.

Para cambiar el ajuste

Presione el botón del ítem que desee cambiar para que el indicador ▶ aparezca en el visor al lado del ítem seleccionado. Gire CONTROL para cambiar al ajuste deseado.

Para bloquear los ajustes manuales

Después de hacer el ajuste, ponga AUTO LOCK en HOLD. Los botones IRIS, SHUTTER SPEED, GAIN, WHT BAL y el dial CONTROL no funcionarán.

Para volver al modo de ajuste automático

Presione el botón del ítem que desee volver a poner en el modo de ajuste automático para que el indicador ▶ aparezca en el visor al lado del ítem seleccionado, y luego presione de nuevo el mismo botón. Para volver a poner todos los ítemes en el modo automático, ponga AUTO LOCK en AUTO LOCK.

Nota sobre el nivel de ganancia

Cuando seleccione un nivel de ganancia demasiado alto, la imagen tal vez se distorsione.

Using Slow Shutter

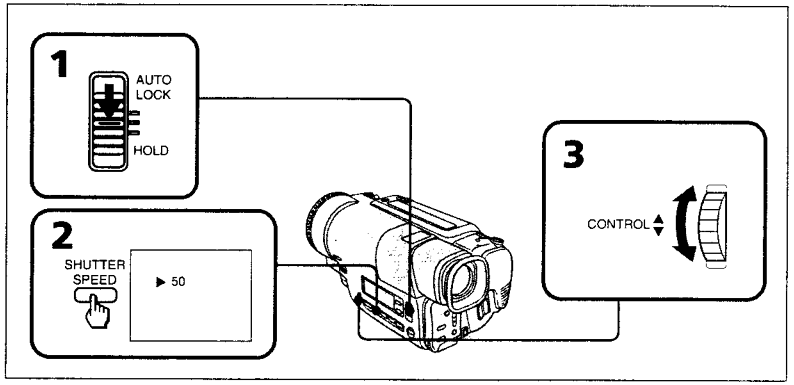
Empleo del obturador lento

If you want to record a dark picture brightly, or represent the movement of the subject lively, set the shutter speed to 1/25, 1/12, 1/6 or 1/3 (Slow shutter).

(1) Set AUTO LOCK to the centre position.
(2) Press SHUTTER SPEED.
(3) Turn CONTROL to select the desired shutter speed (1/25, 1/12, 1/6 or 1/3). As the indicator in the viewfinder becomes smaller, the shutter speed becomes slower.

Si desea grabar brillantemente una imagen oscura, o representar vivamente el movimiento del motivo, ajuste una velocidad del obturador de 1/25, 1/12, 1/6 ó 1/3 (obturador lento).

(1) Ponga AUTO LOCK en la posición central.
(2) Presione SHUTTER SPEED.
(3) Gire CONTROL para seleccionar la velocidad del obturador deseada (1/25, 1/12, 1/6 ó 1/3). La velocidad del obturador disminuye según se reduce el indicador del visor.



To Return to Automatic Adjustment Mode

Press SHUTTER SPEED so that the ▶ indicator appears in the viewfinder at the side of the shutter speed value indicator, then press SHUTTER SPEED again.

When recording with slow shutter function

- You cannot use overlap or flash motion function.
- Autofocus may not be effective. Focus manually using a tripod.

Para volver al modo de ajuste automático

Presione SHUTTER SPEED para que el indicador ▶ aparezca en el visor al lado del indicador del valor de velocidad del obturador, y luego presione de nuevo SHUTTER SPEED.

Cuando grabe con la función del obturador lento

- No podrá utilizar la función de superposición o de movimiento rápido.
- El enfoque automático tal vez no sea eficaz. Enfoque manualmente empleando un trípode.

Tips for Manual Adjustment

Consejos para el ajuste manual

When you shoot in manual adjustment mode, we recommend you to keep the exposure fixed to make a clear picture. This section shows you what the exposure is and how to adjust each item with the exposure fixed.

Understanding the Exposure

Exposure is determined by aperture, shutter speed and gain, and is measured in EV (exposure value) as shown below.

Total EV = EV from aperture control
+ EV from shutter speed control
+ EV from gain control

The total exposure value can be varied or maintained at a constant level by controlling the aperture, gain and shutter speed.

Use the following graph to select the setting. One scale corresponds to one step of each item. (In slow shutter mode, two scales corresponds to one step.) The exposure changes 0.5 EV per step.

[a] Vertical axis: Aperture value (F value)
[b] Horizontal axis: Shutter speed (per second)
[c] Diagonal axis: Gain level (dB)

Cuando filme en el modo de ajuste manual, le recomendamos mantener fijada la exposición para filmar una imagen clara. Esta sección le muestra qué es la exposición y cómo ajustar cada ítem con la exposición fijada.

Para comprender la exposición

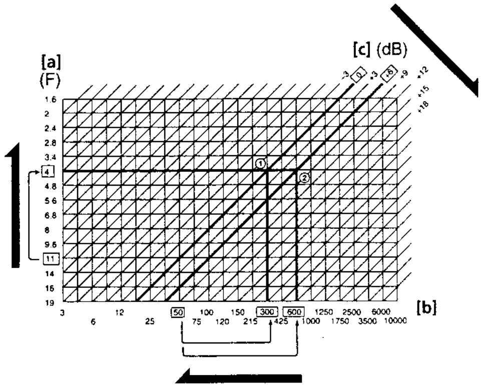
La exposición se determina mediante la apertura, la velocidad del obturador y la ganancia, y se mide en EV (valor de exposición) como se muestra más abajo.

EV total = EV del control de apertura
+ EV del control de velocidad del obturador
+ EV del control de ganancia

El valor de exposición total podrá cambiarse o mantenerse a un nivel constante controlando la apertura, la ganancia y la velocidad del obturador.

Emplee el gráfico siguiente para seleccionar el ajuste. Una escala corresponde a un paso de cada ítem. (En el modo de obturador lento, dos escalas corresponden a un paso.) La exposición cambia 0,5 EV por paso.

[a] Eje vertical: Valor de apertura (valor F)
[b] Eje horizontal: Velocidad del obturador (por segundo)
[c] Eje diagonal: Nivel de ganancia (dB)



➡ : Brighter/Más brillante

Creating a Desired Picture without Changing the Exposure

When the aperture value is F11, the shutter speed is 1/50, and the gain level is 0 dB, adjust the aperture value manually to F4, as an example.
When you change the aperture, shutter speed or gain level by 1 step, the exposure changes by 0.5 EV (1.0 EV in slow shutter mode).
If you change the aperture value from F11 to F4 in the above example, the exposure from aperture control becomes brighter by 6 steps (+3 EV). Adjust the shutter speed and the gain so that the exposure becomes darker by -3 EV to not change the total exposure.

Example 1: Changing Only the Shutter Speed

To reduce the exposure by -3 EV using the shutter speed, you should increase the speed 6 steps. Change the shutter speed from 1/50 to 1/300 (①).

Example 2: Setting the Shutter Speed to 1/600 and Changing the Gain Level

When the shutter speed is changed from 1/50 to 1/600, the EV from the shutter speed control changes to -4 EV. To maintain total exposure, +1 EV (2 steps) should be added by increasing the gain level. Change the gain level from 0 dB to +6 dB (②). Note that when you set the gain level higher, the picture may be distorted.

Notes on manual adjustment

- When recording outdoors, the brightness of a subject may be affected by weather.
- When recording conditions change, we recommend that you reset each item.

Creación de una imagen deseada sin cambiar la exposición

Cuando el valor de la apertura sea F11, la velocidad del obturador 1/50 y el nivel de ganancia 0 dB, ajuste manualmente el valor de la apertura a F4, a modo de ejemplo.
Cuando cambie la apertura, la velocidad del obturador o el nivel de ganancia 1 paso, la exposición cambiará 0,5 EV (1,0 EV en el modo de obturador lento).
Si cambia el valor de la apertura de F11 a F4 en el ejemplo de arriba, la exposición del control de apertura se hace 6 pasos (+3 EV) más brillante. Ajuste la velocidad del obturador y la ganancia para que la exposición se haga -3 EV más oscura para no cambiar la exposición total.

Ejemplo 1: Cambio de la velocidad del obturador solamente

Para reducir la exposición -3 EV empleando la velocidad del obturador deberá aumentar la velocidad 6 pasos. Cambie la velocidad del obturador de 1/50 a 1/300 (①).

Ejemplo 2: Ajuste de la velocidad del obturador a 1/600 y cambio del nivel de ganancia

Cuando la velocidad del obturador se cambie de 1/50 a 1/600, el EV del control de velocidad del obturador cambiará a -4 EV. Para mantener la exposición total deberá añadirse +1 EV (2 pasos) aumentando el nivel de ganancia. Cambie el nivel de ganancia de 0 dB a +6 dB (②). Tenga en cuenta que cuando ajuste un nivel de ganancia más alto, la imagen tal vez se distorsione.

Notas sobre el ajuste manual

- Cuando grabe en exteriores, el brillo del motivo tal vez sea afectado por el tiempo.
- Cuando cambien las condiciones de grabación, le recomendamos reponer cada ítem.

Adjusting the Brightness of the Picture

Ajuste del brillo de la imagen

When you shoot in a snowfield or on a beach in the mid-summer and the subject may become dark because of the extreme brightness, you can change the brightness of the picture in the menu system. You can also use this function when the subject is too bright — subjects on stages, night views, etc.

(1) While the camcorder is in Standby mode, press MENU to display the menu in the viewfinder.

(2) Press ↑ (+) or ↓ (–) to select AE SHIFT, then press EXECUTE.

(3) Press ↑ (+) or ↓ (–) to adjust the brightness of the picture. The picture becomes brighter when you press ↑ (+), and darker when you press ↓ (–).

(4) Press MENU. The menu display disappears and the AE shift indicator appears in the viewfinder.

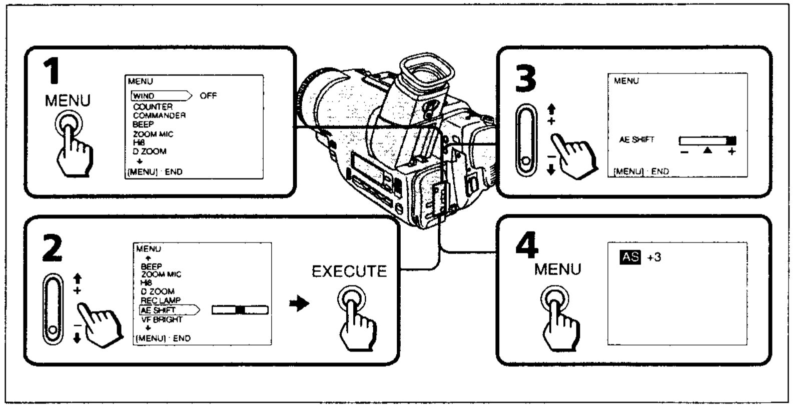
Cuando filme en un campo nevado o en una playa en pleno verano y el motivo tal vez quede oscuro debido al brillo excesivo, podrá cambiar el brillo de la imagen en el sistema de menú. También podrá emplear esta función cuando el motivo esté demasiado brillante — motivos en escenarios, vistas nocturnas, etc.

(1) Mientras la videocámara esté en el modo de espera, presione MENU para visualizar el menú en el visor.

(2) Presione ↑ (+) o ↓ (–) para seleccionar AE SHIFT, y luego presione EXECUTE.

(3) Presione ↑ (+) o ↓ (–) para ajustar el brillo de la imagen. La imagen se hará más brillante cuando presione ↑ (+), y más oscura cuando presione ↓ (–).

(4) Presione MENU. La visualización del menú desparecerá y el indicador de desplazamiento de AE aparecerá en el visor.



To Cancel the AE shift

Set AE SHIFT to the centre position in the menu system.

When adjusting the brightness

We recommend you to connect the camcorder to a TV so that you can monitor the brightness on the TV.

Note on the AE shift

You cannot change AE shift while adjusting the iris manually.

Para cancelar el desplazamiento de AE

Ponga AE SHIFT en la posición central del sistema de menú.

Cuando ajuste el brillo

Le recomendamos conectar la videocámara a un televisor para que pueda comprobar el brillo en el televisor.

Nota sobre el desplazamiento de AE

No podrá cambiar el desplazamiento de AE mientras ajuste manualmente el iris.

Adjusting the White Balance

Ajuste del equilibrio del blanco

White balance is the adjustment to make white subjects look white and to obtain a more natural colour balance.

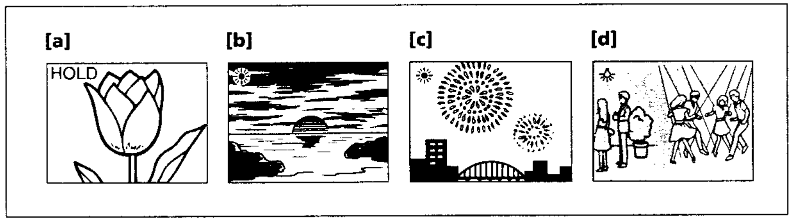
Selecting the Appropriate Mode

Select the appropriate white balance mode under the following conditions:

El ajuste del equilibrio del blanco hará que los motivos blancos aparezcan de color blanco y que el equilibrio del color sea más natural.

Selección del modo apropiado

Seleccione el modo de equilibrio del blanco apropiado bajo las condiciones siguientes:



HOLD Hold mode

- Shooting with the lighting condition on the subject set and with the white balance fixed
- Monochromatic subject or background **[a]**

☀ Outdoor mode

- Under a colour matching fluorescent lamp
- Recording a sunset/sunrise, just after sunset, just before sunrise **[b]**, neon signs, or fireworks **[c]**

💡 Indoor mode

- Lighting condition changes quickly. **[d]**
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

When you shoot under a fluorescent lamp, however, we recommend you to adjust the white balance automatically. You may not get an appropriate white balance when you record in the indoor mode.

See the next page for further information.

HOLD Modo de bloqueo

- Filmación con la condición de iluminación del motivo ajustada y el equilibrio del blanco fijado
- Motivo o fondo monocromático **[a]**

☀ Modo de exteriores

- Bajo una lámpara fluorescente con concordancia de color
- Grabación de la puesta/salida del sol, justo después de la puesta del sol, justo antes de la salida del sol **[b]**, letreros de neón o fuegos artificiales **[c]**

💡 Modo de interiores

- Las condiciones de iluminación cambian rápidamente **[d]**
- Lugares con demasiado brillo tales como estudios fotográficos
- Bajo lámparas de sodio o mercurio

Cuando filme bajo la luz de lámparas fluorescentes, sin embargo, le recomendamos ajustar automáticamente el equilibrio del blanco. Cuando grabe en el modo de interiores tal vez no obtenga un equilibrio del blanco apropiado.

Vea la página siguiente para más información.

Adjusting the White Balance

Ajuste del equilibrio del blanco

Setting the White Balance Mode

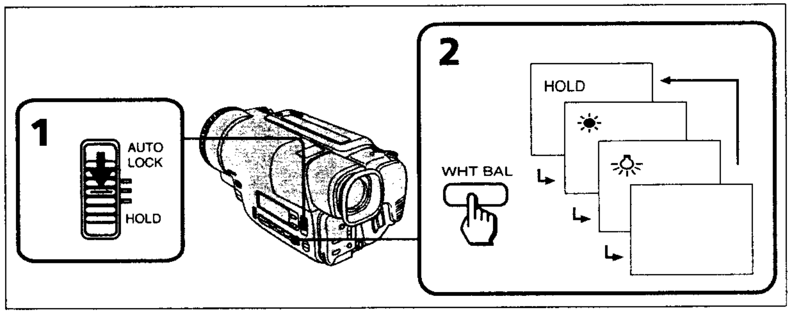
(1) Set AUTO LOCK to the centre position

(2) Press WHT BAL repeatedly so that the desired mode indicator appears in the viewfinder.

Ajuste del modo del equilibrio del blanco

(1) Ponga AUTO LOCK en la posición central.

(2) Presione repetidamente WHT BAL para que el indicador del modo deseado aparezca en el visor.



To Return to Automatic White Balance Mode

Press WHT BAL repeatedly until the white balance indicator disappears, or set AUTO LOCK to AUTO LOCK.

When the light source changes

Adjust the white balance again.

- When you record in manual adjustment mode, set AUTO LOCK to AUTO LOCK once, then set it to the centre position again.
- When you record in automatic adjustment mode, or when you replace the battery pack, point the lens toward a white object for approx. 10 seconds, then start recording.

Para volver al modo de equilibrio del blanco automático

Presione repetidamente WHT BAL hasta que el indicador del equilibrio del blanco desaparezca, o ponga AUTO LOCK en AUTO LOCK.

Cuando cambie la fuente de iluminación

Ajuste de nuevo el equilibrio del blanco.

- Cuando grabe en el modo de ajuste manual, ponga una vez AUTO LOCK en AUTO LOCK y luego póngalo de nuevo en la posición central.
- Cuando grabe en el modo de ajuste automático, o cuando reemplace la batería, dirija el objetivo hacia un objeto blanco durante 10 segundos aproximadamente, y luego empiece a grabar.

Locking the White Balance Setting (HOLD mode)

When you set the white balance to HOLD mode, the last automatic white balance setting will be locked and maintained even if lighting conditions change.

(1) Set AUTO LOCK to AUTO LOCK.

(2) Point the camcorder at a white and flat object such as a white wall or paper for about 15 seconds. Or, close the STANDBY cover while recording a white object, then open the cover again.

(3) Set AUTO LOCK to the centre position.

(4) Press WHT BAL so that the HOLD indicator appears in the viewfinder.

Bloqueo del ajuste del equilibrio del blanco (modo HOLD)

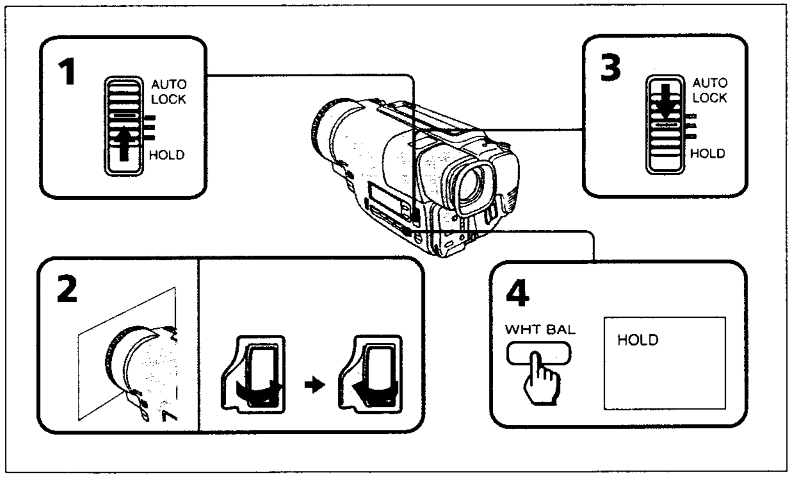
Cuando ponga el equilibrio del blanco en el modo HOLD, el último ajuste del equilibrio del blanco automático se bloqueará y se mantendrá aunque cambien las condiciones de iluminación.

(1) Ponga AUTO LOCK en AUTO LOCK.

(2) Dirija la videocámara hacia un objeto blanco y plano, tal como una pared o papel, durante unos 15 segundos. O, cierre la tapa STANDBY mientras graba un objeto blanco y luego ábrala otra vez.

(3) Ponga AUTO LOCK en la posición central.

(4) Presione WHT BAL para que el indicador HOLD aparezca en el visor.



Note on the HOLD mode setting

The white balance setting for HOLD mode is retained even when you remove the battery pack or change white balance mode, as long as the lithium battery is installed in the camcorder.

Nota sobre el ajuste del modo HOLD

El ajuste del equilibrio del blanco para el modo HOLD se mantendrá aunque quite la batería o cambie el modo del equilibrio del blanco, siempre que la pila de litio esté instalada en la videocámara.

Returning to a Pre-registered Position

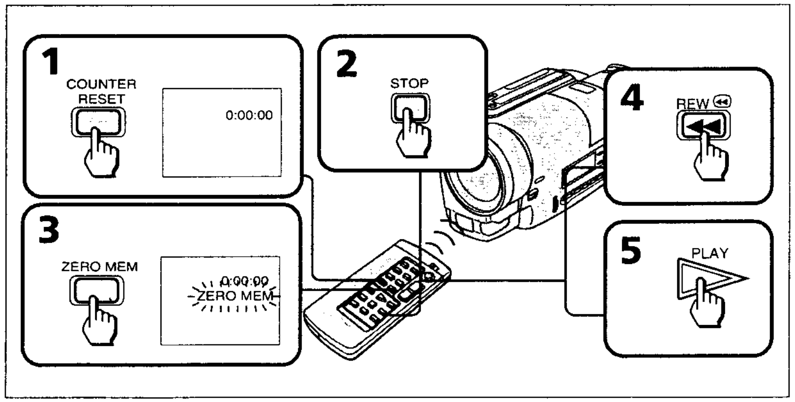
Using the Remote Commander, you can easily go back to the desired point on a tape after playback. Use the tape counter. If the RC time code appears in the viewfinder, set COUNTER to NORMAL in the menu system (p. 31) to display the tape counter.

(1) During playback, press COUNTER RESET at the point you later want to locate. The counter shows "0:00:00" in the viewfinder.
(2) Press ■ when you want to stop playback.
(3) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes in the viewfinder.
(4) Press ◀◀ to rewind the tape to the counter's zero point. The tape stops automatically when the counter reaches approximately zero.
(5) Press ▶. Playback starts from the counter's zero point.

Vuelta a una posición previamente registrada

Empleando el telemando podrá volver fácilmente a un punto deseado de la cinta después de la reproducción. Emplee el contador de la cinta. Si el código de tiempo RC aparece en el visor, ponga COUNTER en NORMAL en el sistema de menú (página 31) para visualizar el contador de la cinta.

(1) Durante la reproducción, presione COUNTER RESET en el punto que desee localizar posteriormente. El contador mostrará "0:00:00" en el visor.
(2) Presione ■ cuando desee detener la reproducción.
(3) Presione ZERO MEM del telemando. El indicador ZERO MEM parpadeará en el visor.
(4) Presione ◀◀ para rebobinar la cinta hasta el punto cero del contador. La cinta se parará automáticamente cuando el contador alcance aproximadamente cero.
(5) Presione ▶. La reproducción empezará desde el punto cero del contador.



Notes on the tape counter

- Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
- There may be a discrepancy of several seconds from the actual time.

Notas sobre el contador de la cinta

- Para que funcione el contador de la cinta, deberá tener algo grabado en la cinta. El contador de la cinta no funcionará con una cinta en blanco.
- Es posible que exista una diferencia de varios segundos entre el contador y el tiempo real.

Notes on ZERO MEM

- When you press ZERO MEM, the counter's zero point is memorized. Press ZERO MEM again before rewinding to cancel the memory.
- This function is cancelled automatically once the tape is rewound or advanced to the point you pre-registered.
- ZERO MEM does not function during recording or playing back.

Using this Function in Reverse

You can return to a desired position after rewinding with this function. Press COUNTER RESET at the point you want to return to later. Press ◀◀. Press ■ when you want to stop rewinding. Press ZERO MEM on the Remote Commander. Press ▶▶. The tape automatically stops when the counter reaches approximately zero.

Notas sobre ZERO MEM

- Cuando presione ZERO MEM, el punto cero del contador se memorizará. Presione de nuevo ZERO MEM antes de rebobinar la cinta para cancelar la memoria.
- Esta función se cancelará automáticamente una vez que la cinta se haya rebobinado o haya avanzado hasta el punto previamente registrado.
- ZERO MEM no funcionará durante la grabación ni la reproducción.

Empleo de esta función en el rebobinado

Podrá volver a una posición deseada después de haber rebobinado la cinta con esta función. Presione COUNTER RESET en el punto al que desee volver más tarde. Presione ◀◀. Presione ■ cuando desee parar el rebobinado. Presione ZERO MEM del telemando. Presione ▶▶. La cinta se parará automáticamente cuando el contador alcance aproximadamente cero.

Locating the Marking Position

You can locate the beginning of a desired programme easily by marking an index signal during recording or playback and searching for it later.

Marking an Index Signal

You can mark an index signal during recording or playback. You can also mark it with the Remote Commander.

See the next page for further information.

Localización de la posición marcada

Podrá localizar fácilmente el principio de un programa deseado marcando una señal de índice durante la grabación o la reproducción y localizándola más tarde.

Marcación de una señal de índice

Podrá marcar una señal de índice durante la grabación o la reproducción. También podrá emplearse el telemando para marcar señales de índice.

Vea la página siguiente para más información.

Locating the Marking Position

Localización de la posición marcada

When Marking at the Beginning of Recording or Playback

Press INDEX MARK on the Remote Commander or the camcorder in recording standby or playback pause mode. The INDEX MARK indicator appears in the viewfinder with the MARK indicator flashing. When recording or playback starts, the MARK indicator stops flashing. This shows that the index signal is being marked. Then the INDEX MARK indicator will disappear.

When Marking during Recording or Playback

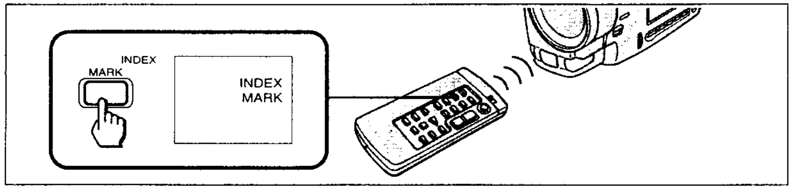
Press INDEX MARK on the Remote Commander or the camcorder at the point you want to locate later.

Cuando marque al principio de la grabación o la reproducción

Presione INDEX MARK del telemando o de la videocámara en el modo de espera de grabación o en el modo de pausa de reproducción. El indicador INDEX MARK aparecerá en el visor con el indicador MARK parpadeando. Cuando empiece la grabación o la reproducción, el indicador MARK dejará de parpadear. Esto mostrará que la señal de índice está siendo marcada. Luego, el indicador INDEX MARK desaparecerá.

Cuando marque durante la grabación o la reproducción

Presione INDEX MARK del telemando o de la videocámara en el punto que desee localizar más adelante.



Notes on marking

- Make sure you mark index signals at more than two-minute intervals. Otherwise, you may not be able to search for them correctly.
- If you stop recording while the index signal is being marked (the INDEX MARK indicator lights in the viewfinder), the search may not be completed correctly.
- If you mark an index signal on the tape with the Data Code or RC time code recorded, the Data Code or RC time code will be erased at the point on which the index signal is marked. When playing back this tape, the camcorder keeps displaying the data code immediately before the erased one. If the data code does not exist for more than 30 seconds, the data code displays bars (--).
- A black band appears when you mark index signal during playback, and the sound is not recorded. This does not affect the picture and the sound that are already recorded.
- You cannot mark an index signal on a tape with the red mark on the cassette exposed (p. 10), or on a tape recorded in LP mode.

Notas sobre la marcación

- Asegúrese de marcar señales de índice con un intervalo de dos minutos como menos. De lo contrario, es posible que no pueda localizarlas correctamente.
- Si para la grabación mientras esté marcándose una señal de índice (el indicador INDEX MARK aparece en el visor), es posible que la búsqueda no se realice correctamente.
- Si marca una señal de índice en la cinta en la que esté grabado el código de datos o el código de tiempo RC, éstos se borrarán en el punto en el que se marque la señal de índice. Cuando reproduzca esta cinta, permanecerá visualizado el código de datos inmediatamente anterior al borrado. Si no hay código de datos durante más de 30 segundos, se visualizarán las barras (--).
- Cuando marque una señal de índice durante la reproducción aparecerá una franja negra, y el sonido no se grabará. Esto no afectará a la imagen ni al sonido que ya estén grabados.
- No podrá marcar una señal de índice en una cinta si está expuesta la marca roja del videocasete (página 10), o si la cinta está grabada en el modo LP.

Erasing an Index Signal

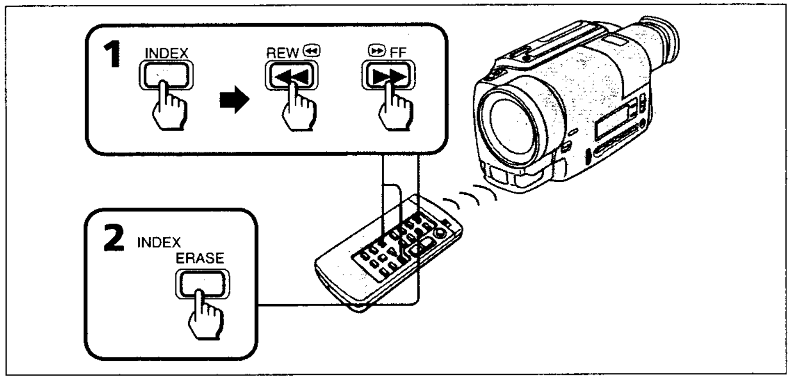
(1) Locate the index signal to be erased using the index scan or index search function (p. 66, 67).

(2) Press INDEX ERASE on the Remote Commander within 2 to 10 seconds while the desired programme plays back. After the index signal is erased, the camcorder returns to index scan or index search mode, whichever was used in step 1.

Borrado de una señal de índice

(1) Localice la señal de índice que vaya a borrar empleando la función de exploración o la de búsqueda con señales de índice (páginas 66, 67).

(2) Presione INDEX ERASE del telemando dentro de 2 a 10 segundos mientras esté reproduciendo el programa deseado. Después de que la señal de índice se haya borrado, la videocámara volverá al modo de exploración o búsqueda con señales de índice, el que haya activado en el paso 1.



Notes on erasing

- Press INDEX ERASE more than 2 seconds after the playback of the desired programme begins.
- You cannot erase the index signal on a tape with the red mark on the cassette exposed.
- While the index signal is being erased, the sound cannot be heard and a black band appears at the bottom of the picture. This will not affect the recorded sound or picture.
- The camcorder can detect index signals marked with VCRs, but cannot erase them. VCRs with an index function can detect index signals marked with this camcorder but cannot erase them.
- An index signal may be erased when making PCM after recording on another VCR in the portion where the index signal is marked.

See the next page for further information.

Notas sobre el borrado

- Presione INDEX ERASE durante más de 2 segundos después de que haya comenzado la reproducción del programa deseado.
- No podrá borrar señales de índice cuando el videocasete tenga la marca roja al descubierto.
- Mientras esté borrándose una señal de índice, el sonido no podrá oírse y aparecerá una franja negra en la parte inferior de la imagen. Esto no afectará al sonido ni a la imagen grabada.
- La videocámara podrá detectar señales de índice marcadas en videograbadoras, pero no podrá borrarlas. Las videograbadoras provistas de la función de índice podrán detectar señales de índice marcadas en esta videocámara, pero no podrán borrarlas.
- Las señales de índice tal vez se borren cuando haga PCM después de grabar con una videograbadora en la parte donde estaba marcada la señal de índice.

Vea la página siguiente para más información.

Note on RC time code and Data Code
When an index signal is erased, the RC time code and Data Code on the same portion of the tape is also erased. Bars (--) appear in place of the RC time code when the portion is played back. To use that tape for editing using an editing controller (not supplied), rewrite the RC time code (p. 68).

Scanning the Beginning of Each Marking Position — Index Scan

Use the Remote Commander. To view the picture on a TV, press DISPLAY.

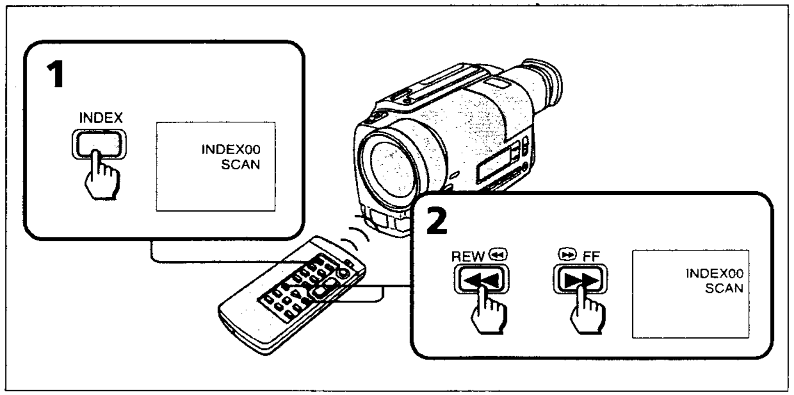
(1) Press INDEX on the Remote Commander during normal playback.
(2) Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which the index signal was marked. If you want to continue playback, press ▶. When you do not press any button, the tape is automatically scanned to the next programme.

Nota sobre los códigos de tiempo RC y de datos
Cuando se borre una señal de índice, los códigos de tiempo RC y de datos de la misma parte de la cinta también se borrarán. Cuando reproduzca esta parte, en lugar del código de tiempo RC aparecerán barras (--). Para emplear esta cinta para la edición empleando un controlador de edición (no suministrado), vuelva a escribir el código de tiempo RC (página 68).

Exploración del principio de cada posición marcada — Exploración con señales de índice

Emplee el telemando. Para ver la imagen en un televisor, presione DISPLAY.

(1) Presione INDEX del telemando durante la reproducción normal.
(2) Presione ◀◀ o ▶▶. La cinta se rebobinará o avanzará rápidamente y se reproducirá durante unos 10 segundos a partir del punto donde se haya marcado la señal de índice. Si desea continuar la reproducción, presione ▶. Cuando no presione ningún botón, la videocámara explorará automáticamente la siguiente señal de índice.



To Cancel Index Scan Mode

Press ▶. Normal playback resumes.

Para cancelar el modo de exploración con señales de índice

Presione ▶. La reproducción normal se reanudará.

Locating the Desired Marking Position — Index Search

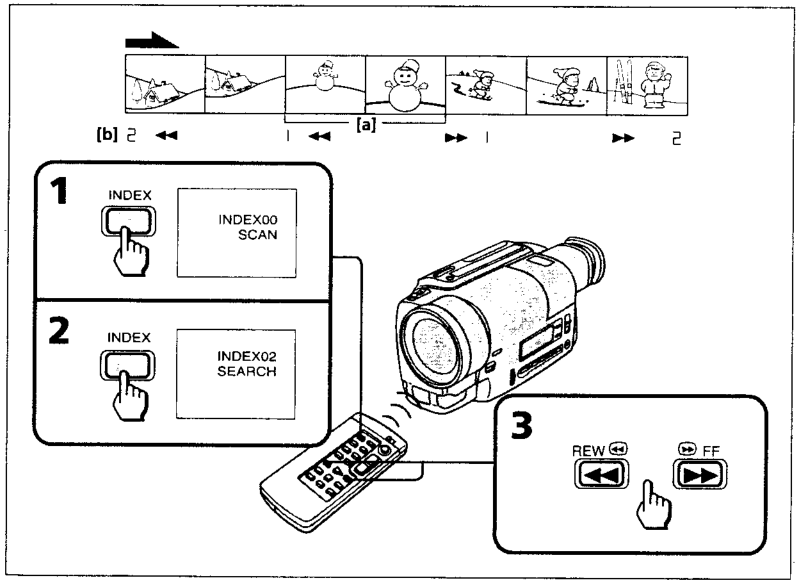
(1) Press INDEX on the Remote Commander during stop or playback mode.
(2) Press INDEX repeatedly until the index number of the desired programme is displayed in the viewfinder.
(3) Press ◀◀ or ▶▶. Playback starts from the beginning of the desired programme.

[a] the current position
[b] the index number

Localización de la posición marcada deseada — Búsqueda con señales de índice

(1) Presione INDEX del telemando durante el modo de parada o de reproducción.
(2) Presione repetidamente INDEX hasta que el número de índice del programa deseado se visualice en el visor.
(3) Presione ◀◀ o ▶▶. La reproducción empezará desde el comienzo del programa deseado.

[a] la posición actual
[b] el número de índice



To Stop Index Search Mode

Press ▶. Normal playback resumes.

Note on the index number
The index number (1, 2, etc.) indicates the distance from the point you are now viewing **[a]**, regardless of the direction.

Para detener el modo de búsqueda con señales de índice

Presione ▶. La reproducción normal se reanudará.

Nota sobre el número de índice
El número de índice (1, 2, etc.) indica la distancia desde el punto que usted está viendo **[a]**, sin tenerse en cuenta la dirección de movimiento de la cinta.

Writing the RC Time Code on a Recorded Tape

Escritura de un código de tiempo RC en una cinta grabada

You can write the RC time code on a recorded tape. Use the Remote Commander.

(1) While pressing the small green button on the POWER switch, slide it to PLAYER.

(2) Rewind the tape to the beginning and set the camcorder to playback pause mode.

(3) Press TIME CODE WRITE on the Remote Commander. The TIME CODE WRITE indicator appears in the viewfinder with the WRITE indicator flashing.

(4) Press ► or II to start playback. The WRITE indicator stops flashing and the RC time code writing starts from 0:00:00:00.

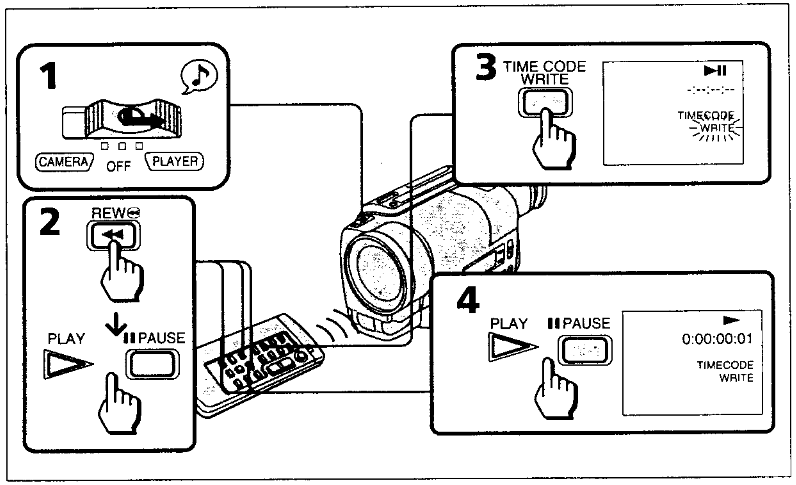
Podrá escribir el código de tiempo RC en una cinta grabada. Emplee el telemando.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta PLAYER.

(2) Rebobine la cinta hasta el principio y ponga la videocámara en el modo de pausa de reproducción.

(3) Presione TIME CODE WRITE del telemando. El indicador TIME CODE WRITE aparecerá en el visor con el indicador WRITE parpadeando.

(4) Presione ► o II para iniciar la reproducción. El indicador WRITE dejará de parpadear y la escritura del código de tiempo RC empezará desde 0:00:00:00.



To Stop Writing the RC Time Code

Press ■ (or any tape transport button).

To Write the RC Time Code from the End of the RC Time Code Recorded Portion

Rewind the tape to the portion on which the RC time code has been written and set the camcorder to playback pause mode. Then follow steps 3 and 4 above. The RC time code is written continuously.

Para detener la escritura del código de tiempo RC

Presione ■ (o cualquier otro botón de transporte de la cinta).

Para escribir el código de tiempo RC a partir del final de la parte grabada con dicho código

Rebobine la cinta hasta la parte en que la se haya escrito el código de tiempo RC y ponga la videocámara en el modo de pausa de reproducción. Después, realice los pasos 3 y 4 anteriores. El código de tiempo RC se escribirá continuamente.

Notes on writing the RC time code

- The RC time code writing stops when:
  - you press TIME CODE WRITE again before starting playback.
  - you press INDEX before starting playback.
  - you change from playback mode to another mode.
- When you are writing the RC time code from the middle of a tape without the time code written, writing starts several frames before the current picture.
- If you write the RC time code on a recorded tape, the data code is erased.
- You cannot mark the RC time code on the tape that is recorded in LP mode. Though you can mark the RC time code on a tape recorded both in LP mode and SP mode, the RC time code written in LP mode, however, may not be read correctly.

Note on --:--:--:-- indicator

The --:--:--:-- indicator appears during playback if:

- nothing is recorded.
- the RC time code is unreadable because of the damage of the tape or because of the noise.
- you recorded using another VCR without RC time code function.
- you erase the index signal or make PCM after recording on another VCR in the portion on which the RC time code is written.

In this case, we recommend you to rewrite the RC time code.

Notas sobre la escritura del código de tiempo RC

- La escritura del código de tiempo RC se parará cuando:
  - Presione de nuevo TIME CODE WRITE antes de empezar la reproducción.
  - Presione INDEX antes de empezar la reproducción.
  - Cambie del modo de reproducción a otro modo.
- Cuando escriba el código de tiempo RC desde el medio de una cinta sin dicho código, la escritura empezará a partir de algunos cuadros antes de la imagen actual.
- Si escribe el código de tiempo RC en una cinta grabada, el código de datos se borrará.
- No podrá escribir el código de tiempo RC en una cinta grabada en el modo LP. Aunque podrá escribir el código de tiempo RC en una cinta grabada en ambos modos, el LP y el SP, el código de tiempo RC escrito en el modo LP, sin embargo, no podrá ser leído correctamente.

Nota sobre el indicador --:--:--:--

El indicador --:--:--:-- aparecerá durante la reproducción si:

- No se ha grabado nada.
- El código de tiempo RC no se puede leer porque la cinta esta estropeada o debido al ruido.
- Se grabó empleando una videograbadora sin función de código de tiempo RC.
- Borra la señal de índice o hace PCM después de grabar con una videograbadora en la parte en la que está escrito el código de tiempo RC.

En este caso, le recomendamos volver a escribir el código de tiempo RC.

Editing onto Another Tape

You can create your own video programme by editing with any other 8 8 mm, **Hi8** Hi8, VHS VHS, **S**VHS S-VHS, VHSC VHSC, **S**VHSC S-VHSC or B Betamax VCR that has video/audio inputs.

Before Editing

Connect the camcorder to the VCR using the supplied Handycam Station (p. 19). You can also connect to the VCR directly using the supplied A/V connecting cable.

Set the input selector on the VCR to LINE, if available.

(1) While pressing the small green button on the POWER switch, slide it to PLAYER.

(2) Set EDIT to ON in the menu system (p. 33).

Edición en otra cinta

Podrá crear su propio programa de vídeo editando con cualquier otra videograbadora de formato de 8 8 mm, **Hi8** Hi8, VHS VHS, **S**VHSS-VHS, VHSC VHSC, **S**VHSCS-VHSC o B Betamax que disponga de entradas de vídeo/audio.

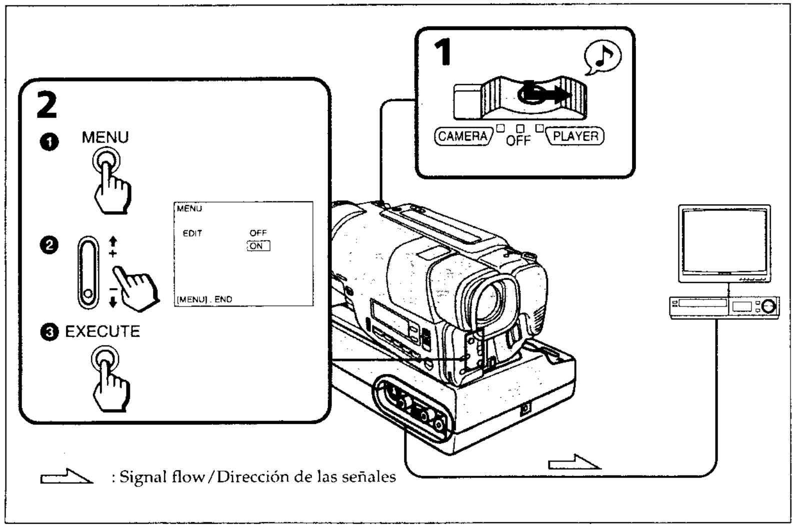
Antes de la edición

Conecte la videocámara a la videograbadora empleando la estación Handycam suministrada (página 19). También podrá conectar directamente la videograbadora empleando el cable de conexión A/V suministrado.

Ponga el selector de entrada de la videograbadora en LINE, si dispone de él.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta PLAYER.

(2) Ponga EDIT en ON en el sistema de menú (página 33).



: Signal flow/Dirección de las señales

1-38

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.

(2) Play back the recorded tape on the camcorder using the Handycam Station until you locate the point where you want to start editing, then press **II** to set the camcorder in playback pause mode.

(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.

(4) Press **II** on the Handycam Station and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press ■ on both the Handycam Station and the VCR.

Use of the EDITSEARCH button

You can play back the tape in normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Inicio de la edición

(1) Introduzca una cinta en blanco (o una cinta sobre la que desee grabar) en la videograbadora y la cinta grabada en la videocámara.

(2) Reproduzca la cinta grabada en la videocámara empleando la estación Handycam hasta que localice el punto donde desee iniciar la edición, luego presione **II** para poner la videocámara en el modo de pausa de reproducción.

(3) En la videograbadora, localice el punto de inicio de la grabación y ponga la videograbadora en el modo de pausa de grabación.

(4) Presione simultáneamente **II** de la estación Handycam y de la videograbadora para iniciar la edición.

Para editar más escenas

Repita los pasos 2 a 4.

Para detener la edición

Presione ■ de la estación Handycam y de la videograbadora.

Empleo del botón EDITSEARCH

Podrá reproducir la cinta en la dirección de avance/retroceso manteniendo presionado EDITSEARCH durante el modo de pausa de reproducción. También podrá reproducir sucesivamente imágenes fijas a intervalos especificados presionando intermitentemente EDITSEARCH.

Nota sobre la función DISPLAY

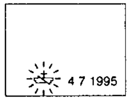
Si ha visualizado los indicadores de la pantalla del visor en el televisor, borre los indicadores presionando DISPLAY del telemando para que no se superpongan en la cinta editada.

Changing the Lithium Battery in the Camcorder

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ⏲ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Cambio de la pila de litio de la videocámara

Su videocámara se suministra con una pila de litio instalada. La pila de litio para la videocámara dura 1 año aproximadamente bajo condiciones de operación normales. Cuando la pila se debilite o se descargue, el indicador ⏲ parpadeará en el visor durante unos 5 segundos cuando ponga el conmutador POWER en CAMERA. En este caso, **reemplace la pila por una pila de litio Sony CR2025. El empleo de cualquier otra pila tal vez presente un riesgo de incendio o explosión.**

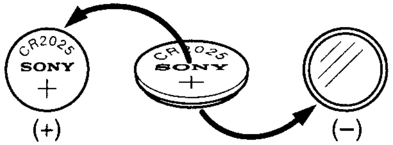


Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. **Be sure to insert the lithium battery with the positive side facing out.**

Nota sobre la pila de litio

La pila de litio tiene un lado positivo (+) y un lado negativo (–), como se muestra en la ilustración. **Asegúrese de instalar la pila de litio con el lado positivo hacia afuera.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution
Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

AVISO
La pila de litio puede explotar si no se trata adecuadamente. No la cargue, desmonte ni tire al fuego.

Precaución
Mantenga la pila de litio donde no puedan alcanzarla los niños. Si alguien traga la pila, consulte inmediatamente a un médico.

Changing the Lithium Battery

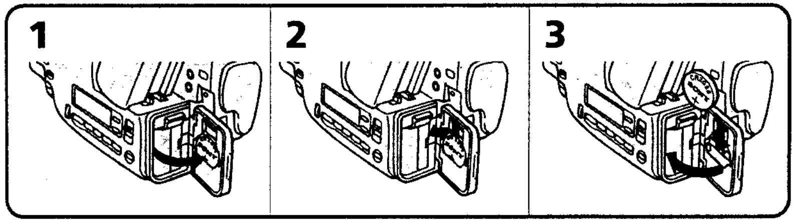
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

(1) Open the lid of lithium battery compartment.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

Cambio de la pila de litio

Cuando reemplace la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De otra forma, tendrá que volver a poner la fecha, la hora y otros ítemes del sistema de menú mantenidos con la pila de litio.

(1) Abra la tapa del compartimiento de la pila de litio.
(2) Empuje una vez la pila hacia abajo y sáquela del portapila.
(3) Instale la pila de litio con el lado positivo (+) hacia afuera. Cierre la tapa.



Resetting the Date or Time

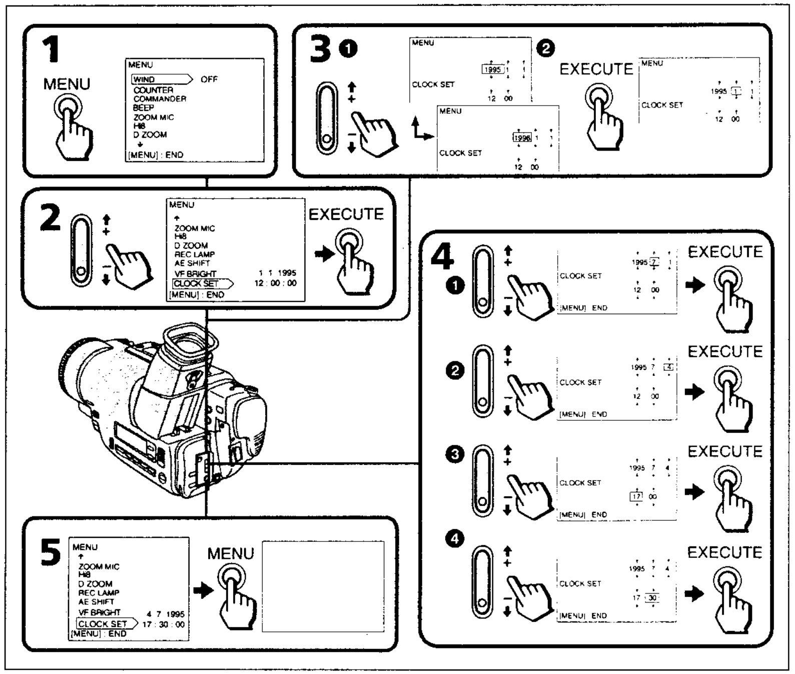
You can reset the date or time in the menu system.

(1) Press MENU to display the menu in the viewfinder.
(2) Select CLOCK SET, then press EXECUTE.
(3) Press ⬆ (+) or ⬇ (–) to adjust the year, and then press EXECUTE.
(4) Set the month, day, hour and minutes by pressing ⬆ (+) or ⬇ (–) and pressing EXECUTE.
(5) Press MENU to erase the menu display.

Reposición de la fecha o la hora

Podrá reponer la fecha o la hora en el sistema de menú.

(1) Presione MENU para visualizar el menú en el visor.
(2) Seleccione CLOCK SET, y luego presione EXECUTE.
(3) Presione ⬆ (+) o ⬇ (–) para ajustar el año, y luego presione EXECUTE.
(4) Ponga el mes, el día, la hora y los minutos presionando ⬆ (+) o ⬇ (–) y EXECUTE.
(5) Presione MENU para borrar la visualización del menú.



To Correct the Date and Time Setting

Repeat steps 2 to 4.

To Check the Preset Date and Time

Press DATE to display the date indicator in the viewfinder.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year indicator changes as follows:

1995 ←→ 1996 ←····→ 2024
↑_____________________↑

Para corregir los ajustes de la fecha y la hora

Repita los pasos 2 a 4.

Para comprobar la fecha y la hora preajustadas

Presione DATE para visualizar el indicador de la fecha en el visor.
Presione TIME para visualizar el indicador de la hora.
Cuando presione otra vez el mismo botón, el indicador se apagará.

El indicador del año cambia de la forma siguiente:

1995 ←→ 1996 ←····→ 2024
↑_____________________↑

Playback Modes

Selecting Cassette Types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures.
You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8 mm video recorder /player, you should record the tape in the standard 8 mm system.
If you want to use a Hi8 cassette with the standard 8 mm video recorder system, set Hi8 to OFF in the menu system before recording (p. 32).

To play back in	Record using cassette type	Set Hi8 setting to
Hi8	Hi8	AUTO
Standard 8	Hi8	OFF
	8	AUTO (or OFF)

Modos de reproducción

Selección del tipo de videocasete

Este sistema Hi8 (8 mm de alta fiedelidad) se desarrolló a partir del sistema de 8 mm estándar ofreciendo mayor calidad en la imagen.
Con esta videocámara podrán utilizarse los videocasetes Hi8 y los de 8 mm estándar.
Cuando desee grabar en el sistema Hi8, deberá utilizar solamente videocasetes Hi8. Un videocasete de 8 mm estándar no podrá grabarse en el sistema Hi8.
Cuando vaya a reproducir la cinta en una videograbadora de 8 mm estándar, grábela en el sistema de 8 mm estándar.
Si desea utilizar un videocasete Hi8 con el sistema de grabación de 8 mm estándar, ponga Hi8 en OFF en el sistema de munú antes de la grabación (página 32).

Para reproducir en el sistema	Grabación empleando un videocasete de tipo	Ponga Hi8 en
Hi8	Hi8	AUTO
8 mm estándar	Hi8	OFF
	8	AUTO (u OFF)

Playback Modes

Modos de reproducción

When You Play Back

The playback mode (SP/LP or Hi8/standard 8 mm) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo
When you play back a tape, the sound will be in monaural if:
- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

LP (long play) mode
When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record a tape in LP mode.

Foreign 8 mm video
You cannot play back software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 84 to check the TV colour system of foreign countries.

Cuando reproduzca

El modo de reproducción (SP/LP o Hi8/8 mm estándar) se seleccionará automáticamente según el formato en el que se haya grabado la cinta. Sin embargo, la calidad de la imagen grabada en el modo LP no será tan buena como la del modo SP.

Nota sobre AFM HiFi estéreo
Cuando reproduzca una cinta, el sonido será monofónico si:
- Graba la cinta utilizando esta videocámara y luego la reproduce en una videograbadora/reproductor AFM HiFi monofónico.
- Graba la cinta en una videograbadora AFM HiFi monofónica y luego la reproduce en esta videocámara.

Modo LP (larga duración)
Cuando reproduzca una cinta grabada en el modo LP, el indicador LP se encenderá en el visor. Esta videocámara no puede grabar una cinta en el modo LP.

Vídeo de 8 mm del extranjero
No podrá reproducir programas grabados con un sistema de televisión en color diferente. Como los sistemas de televisión en color cambian según los países, quizá no pueda reproducir programas grabados en el extranjero. Consulte la página 84 para comprobar cuáles son los sistemas de televisión en color de otros países del extranjero.

Tips for Using the Battery Pack

Consejos para emplear la batería

This section shows you how you can get the most out of your battery pack.

Esta sección le muestra cómo obtener el máximo rendimiento de su batería.

Preparing the Battery Pack

Always Carry Additional Batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Preparación de la batería

Lleve siempre baterías de repuesto
Prepare suficientes baterías para poder alimentar la videocámara el doble o el triple del tiempo de grabación planeado.

Tips for Using the Battery Pack

Consejos para emplear la batería

Battery Life is Shorter in a Cold Environment
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in a cold environment.

To Save Battery Power
Close the STANDBY cover when not recording to save battery power **[a]**.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

La duración de la batería se acortará con el frío
La eficiencia de la batería disminuirá, y se descargará con mayor rapidez, si graba donde haga frío.

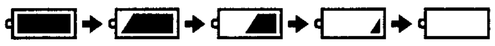
Para ahorrar energía de la batería
Cierre la tapa STANDBY cuando no grabe para ahorrar energía de la batería **[a]**.
Se podrá hacer una transición uniforme entre escenas aunque se pare la grabación y se vuelva a empezar. Mientras se encuentre posicionando el motivo, seleccionando un ángulo o mirando a través del visor, el objetivo se moverá automáticamente y la batería se irá descargando. La batería se empleará también cuando se introduzca o retire una cinta.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up.

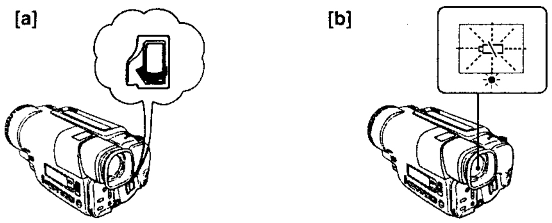
Cuándo reemplazar la batería

Mientras emplee su videocámara, el indicador del visor, que muestra la carga restante de la batería, disminuirá gradualmente a medida que la batería se vaya descargando.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder **[b]**.
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack is replaced.

Cuando el indicador de carga restante de la batería alcance el punto más bajo, el indicador ▭ aparecerá en el visor y empezará a parpadear **[b]**.
Cuando el indicador ▭ del visor cambie de parpadeo lento a parpadeo rápido mientras graba, deslice el conmutador POWER de la videocámara hasta OFF y reemplace la batería. Deje la cinta en la videocámara para conseguir una transición uniforme entre escenas después de haber reemplazado la batería.



Notes on the Rechargeable Battery Pack

Caution
Never leave the battery pack under temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.

The Battery Pack Heats Up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Pack Care
- **Remove the battery pack from the camcorder after using the battery pack,** and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

The Switch on the Battery Pack
This switch is provided so that you can mark the charged battery pack. Set the switch to the "green mark" position when charging is completed **[c]**. (When removed from the charging adaptor, the switch exposes the green mark. When removed from your camcorder, no mark is indicated.)

The Life of the Battery Pack
If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature
You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Notas sobre la batería recargable

Precaución
Nunca deje la batería expuesta a temperaturas superiores a 60°C, tal como la producida en el interior de un automóvil estacionado al sol o bajo la luz solar directa.

La batería se calienta
Durante la carga o la grabación, la batería se calentará. Esto se debe a la energía que ha sido generada y al cambio químico que se ha producido en el interior de la batería. Esto no es motivo de preocupación.

Cuidados de la batería
- **Retire la batería de la videocámara después de haberla empleado,** y guárdela en un lugar fresco. Cuando la batería esté instalada en la videocámara fluirá una pequeña cantidad de corriente a pesar de que el conmutador POWER se encuentre en OFF, lo que reducirá la carga de la batería.
- La batería se descargará continuamente, incluso cuando no se emplee después de haberla cargado. Por lo tanto, deberá cargar la batería justo antes de emplear la videocámara.

El conmutador de la batería
Este conmutador ha sido suministrado para que usted pueda marcar la batería cargada. Póngalo en la posición de la "marca verde" cuando termine de cargar la batería **[c]**. (Cuando retire la batería del adaptador de carga, el conmutador dejará descubierta la marca verde. Cuando la retire de su videocámara, no se indicará ninguna marca.)

Duración de la batería
Si el indicador de la batería parpadea rápidamente justo después de encender la videocámara con una batería completamente cargada, la batería deberá reemplazarse por otra nueva completamente cargada.

Temperatura de carga
Deberá cargar las baterías a temperaturas de entre 10°C y 30°C. A temperaturas más bajas se requerirá más tiempo de carga.

Notes on Charging

A Brand-new Battery Pack
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Recharge the Battery Pack Whenever You Like
You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. Then recharge the battery pack before use.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Be Sure to Observe the Following
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Nota sobre la carga

Una batería nueva
Una batería nueva no estará cargada. Antes de emplear la batería, cárguela completamente.

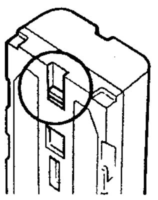
Cargue las baterías cuando usted quiera
No es necesario tener que descargar las baterías antes de cargarlas. Si ha cargado completamente una batería pero no la ha utilizado durante mucho tiempo, ésta se habrá descargado. Cargue entonces esta batería antes de emplearla.

Notas sobre los terminales

Si los terminales (partes metálicas del lado posterior) no están limpios, la duración de la batería se acortará.
Cuando los terminales no estén limpios o cuando no haya empleado la batería durante mucho tiempo, instale y extraiga la batería repetidamente. Esto mejorará el contacto. Además, limpie los terminales + y – con un papel o un paño suave.

No se olvide de observar los puntos siguientes
- Mantenga la batería alejada del fuego.
- Mantenga la batería seca.
- No abra ni modifique la batería.
- No exponga la batería a ningún golpe mecánico.

[c]



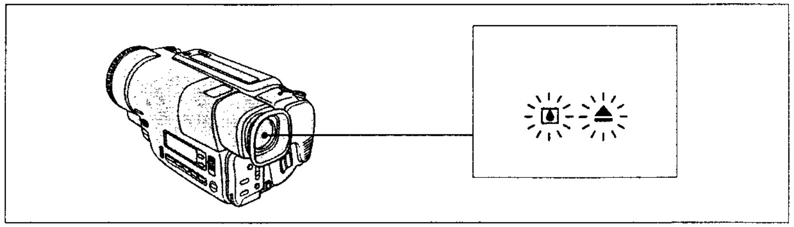
Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When the ◙ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette compartment open for at least one hour. The camcorder can be used again if the ◙ indicator does not appear when the power is turned on again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert the cassette and press a tape transport button (▷ PLAY, etc.), the ⏏ indicator in the viewfinder flashes. In this case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette compartment open for at least one hour. The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

Información de mantenimiento y precauciones

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta o en el objetivo. En estas condiciones, la cinta podrá adherirse al tambor de las cabezas y estropearse, o la videocámara podría no funcionar adecuadamente. Para evitar la posibilidad de que se produzcan fallos en estas circunstancias, la videocámara dispone de sensores de humedad. Sin embargo, tome las precauciones siguientes.

En el interior de la videocámara

Cuando los indicadores ◙ y ⏏ parpadeen en el visor, se habrá condensado humedad en el interior de la videocámara. En este caso no funcionará ninguna otra función, a excepción de la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y deje ésta con el compartimiento del videocasete abierto durante una hora como mínimo. La videocámara podrá volver a emplearse si el indicador ◙ no aparece cuando se conecte otra vez la alimentación.

En la superficie de la cinta

Si hay humedad en la superficie de la cinta, cuando inserte el videocasete y presione un botón de transporte de la cinta (▷ PLAY, etc.), el indicador ⏏ del visor parpadeará. En este caso no funcionará ninguna otra función, a excepción de la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y deje ésta con el compartimiento del videocasete abierto durante una hora como mínimo. La videocámara podrá volver a emplearse si el indicador ⏏ no aparece cuando inserte el videocasete y presione uno de los botones de transporte de la cinta.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

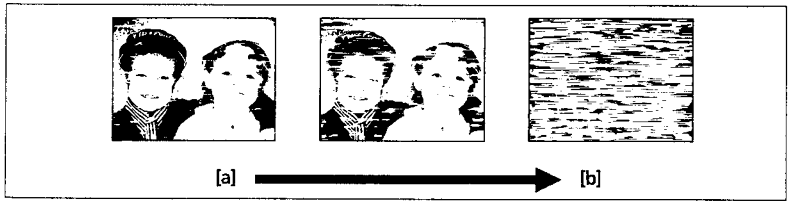
How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "⊜ CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

En el objetivo

Si se condensa humedad en el objetivo no aparecerá ningún indicador, pero la imagen perderá intensidad. Desconecte la alimentación y no emplee la videocámara durante uno hora aproximadamente.

Cómo evitar la condensación de humedad

Cuando pase la videocámara de un lugar frío a otro cálido, meta la videocámara en una bolsa de plástico y deje que se adapte a las condiciones de la sala durante cierto periodo de tiempo.

(1) Asegúrese de cerrar firmemente la bolsa de plástico con la videocámara dentro.
(2) Saque la videocámara de la bolsa cuando la temperatura del aire en el interior de la bolsa haya alcanzado la temperatura alrededor de ella (después de pasar 1 hora aproximadamente).

Limpieza de las cabezas de vídeo

Para asegurar una grabación normal y una imágenes claras, limpie las cabezas de vídeo. Cuando el indicador ⊗ y el mensaje "⊜ CLEANING CASSETTE" aparezcan en el visor uno después de otro o cuando las imágenes reproducidas tengan "ruido" o apenas se puedan ver, las cabezas de vídeo quizá estén sucias.

[a] Cabezas un poco sucias
[b] Cabezas muy sucias

Si pasa esto, limpie las cabezas de vídeo con el videocasete de limpieza Sony V8-25CLH (no suministrado). Después de comprobar la imagen, si ésta aún sigue teniendo "ruido," repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución

No emplee un videocasete de limpieza tipo húmedo de venta en el comercio del ramo porque podría estropear las cabezas de vídeo.

Nota

Si no puede adquirir en su zona el videocasete de limpieza V8-25CLH, consulte con su concesionario Sony más cercano.

Maintenance Information and Precautions

Información de mantenimiento y precauciones

Precautions

Camcorder Operation

- Operate the camcorder on 7.2 V (battery pack) or 6.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape or if the tab is out or in.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Precauciones

Operación de la videocámara

- Emplee la videocámara con 7,2 V (batería) o 6,5 V (adaptador de alimentación de CA).
- Para que funcione con CC o CA, emplee los accesorios recomendados en este manual.
- Si dentro de la videocámara cae algún objeto sólido o líquido, desenchúfela y pida a su concesionario Sony que la revise antes de seguir empleándola.
- Evite manejarla con rudeza o los golpes mecánicos. Tenga mucho cuidado con el objetivo.
- Mantenga el conmutador POWER en OFF cuando no emplee la videocámara.
- No emplee la videocámara envuelta porque se calentará.
- Mantenga la videocámara alejada de campos magnéticos fuertes o vibraciones mecánicas.

Manejo de las cintas

No introduzca nada en los agujeros pequeños de la parte posterior del videocasete. Estos agujeros se emplean para averiguar el tipo y el grosor de la cinta, o si la lengüeta está hacia afuera o hacia adentro.

Cuidados de la videocámara

- Cuando no vaya a emplear la videocámara durante mucho tiempo, desconecte la fuente de alimentación y retire la cinta. Periódicamente, conecte la alimentación, emplee las secciones de la cámara y del reproductor y reproduzca una cinta durante unos 3 minutos.
- Limpie el objetivo con un cepillo suave para quitar el polvo. Si tiene huellas dactilares, quítelas con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o con un paño suave ligeramente humedecido en una solución de detergente suave. No emplee ningún tipo de disolvente que pueda estropear el acabado.

AC Power Adaptor

Charging

- Use only a lithium ion type battery pack.
- Charge the battery pack on a flat surface without vibration.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from mains when not in use for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged mains lead or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or put a heavy object on it. This will damage the mains lead and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Adaptador de alimentación de CA

Carga

- Emplee solamente una batería del tipo de ion de litio.
- Cargue la batería sobre una superficie plana sin vibraciones.
- La batería se calentará durante la carga. Esto es normal.

Otras medidas de precaución

- Desenchufe la unidad de la toma de corriente cuando no vaya a emplearla durante mucho tiempo. Para desconectar el cable de alimentación, tire de la clavija. Nunca tire del propio cable.
- No emplee la unidad con el cable de alimentación estropeado, o si se ha caído o está estropeada.
- No doble a la fuerza el cable de alimentación ni ponga un objeto pesado sobre él. Esto estropeará el cable de alimentación y podrá causar un incendio o una sacudida eléctrica.
- Asegúrese de que nada metálico entre en contacto con las partes metálicas de la placa de conexión. En este caso, podrá producirse un cortocircuito y la unidad podrá estropearse.
- Mantenga siempre limpios los contactos metálicos.
- No desmonte la unidad.
- Evite los golpes metálicos y no deja caer la unidad.
- Mientras emplea la unidad, particularmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque la recepción de AM y el funcionamiento de los equipos de vídeo no será adecuado.
- La unidad se calentará mientras la emplee. Esto es normal.
- No ponga la unidad en los lugares siguientes:
  - Muy calientes o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Con vibraciones

Si se presenta alguna dificultad, desenchufe la unidad y póngase en contacto con su concesionario Sony más cercano.

Using Your Camcorder Abroad

Each country has its own electric and TV colour systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV.
Check the following list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Empleo de su videocámara en el extranjero

Cada país tiene sus propios sistemas eléctrico y de televisión en color. Antes de emplear su videocámara en el extranjero, compruebe los puntos siguientes.

Fuentes de alimentación

Podrá emplear su videocámara en cualquier país con el adaptador de alimentación de CA suministrado, dentro de un margen de 100 a 240 V CA, 50/60 Hz.

Diferencias en los sistemas de televisión en color

Esta videocámara se basa en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá ser un televisor basado en el sistema PAL.
Compruebe la lista siguiente.

Países con sistema PAL
Australia, Austria, Bélgica, China, Dinamarca, Finlandia, Alemania, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Nueva Zelanda, Noruega, Portugal, Singapur, España, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

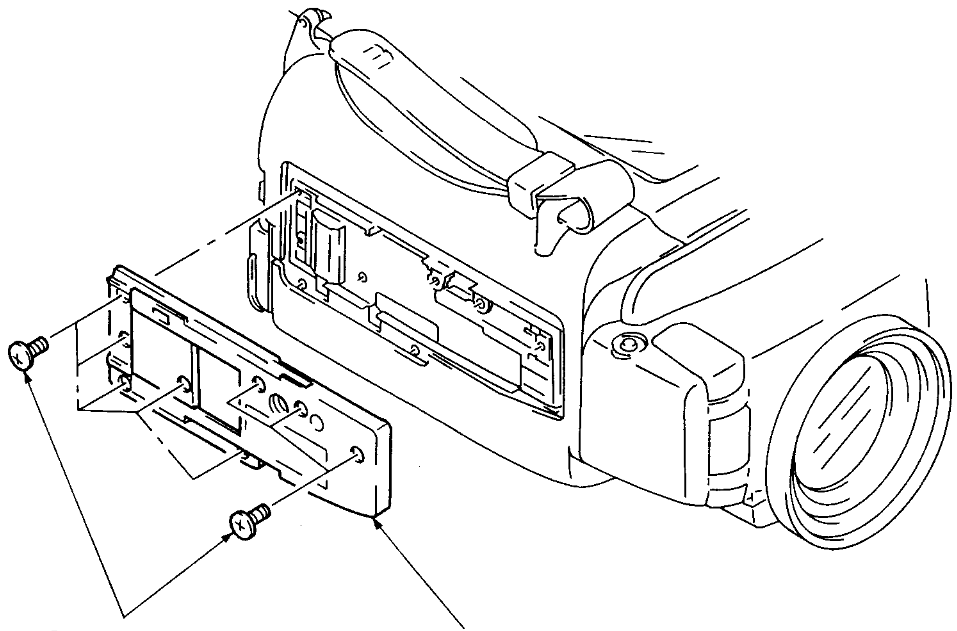
Países con el sistema NTSC
Islas Bahamas, Bolivia, Canadá, países de América Central, Chile, Colombia, Ecuador, Jamaica, Japón, Corea, México, Perú, Surinam, Taiwan, Filipinas, EE.UU., Venezuela, etc.

Países con el sistema SECAM
Bulgaria, República Checa, Francia, Guyana, Hungría, Irán, Iraq, Mónaco, Polonia, Rusia, República Eslovaca, Ucrania, etc.

1-45 E

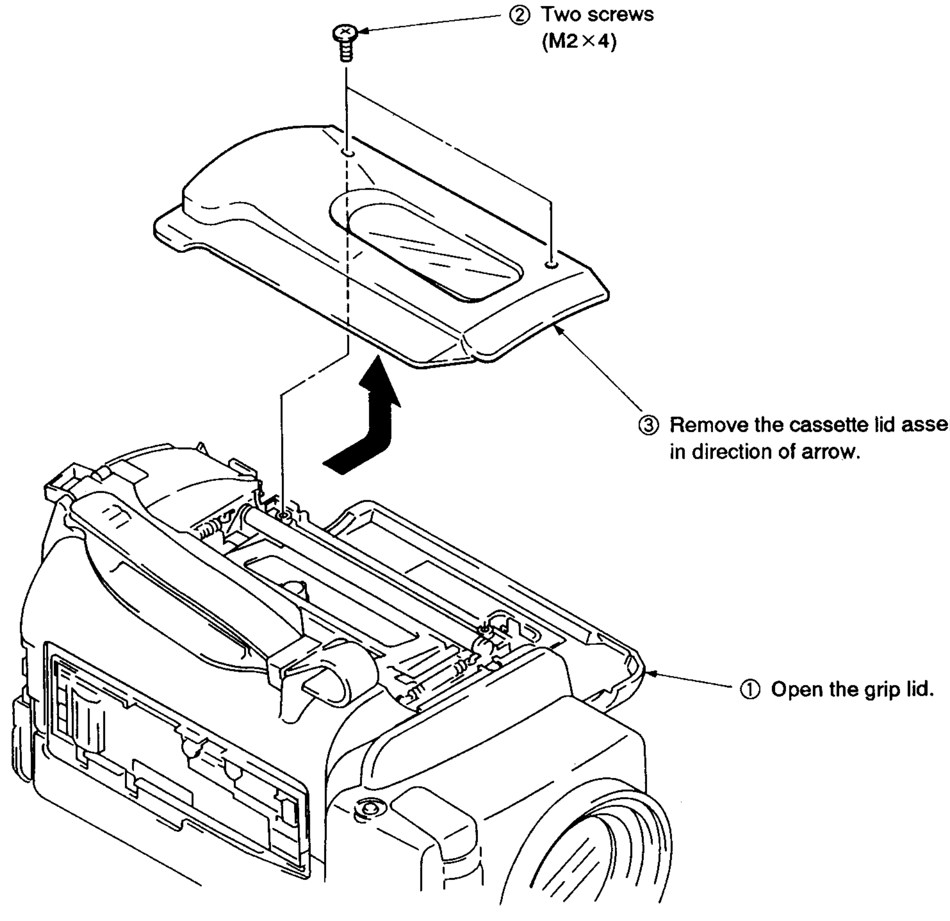
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CABINET BOTTOM ASSEMBLY



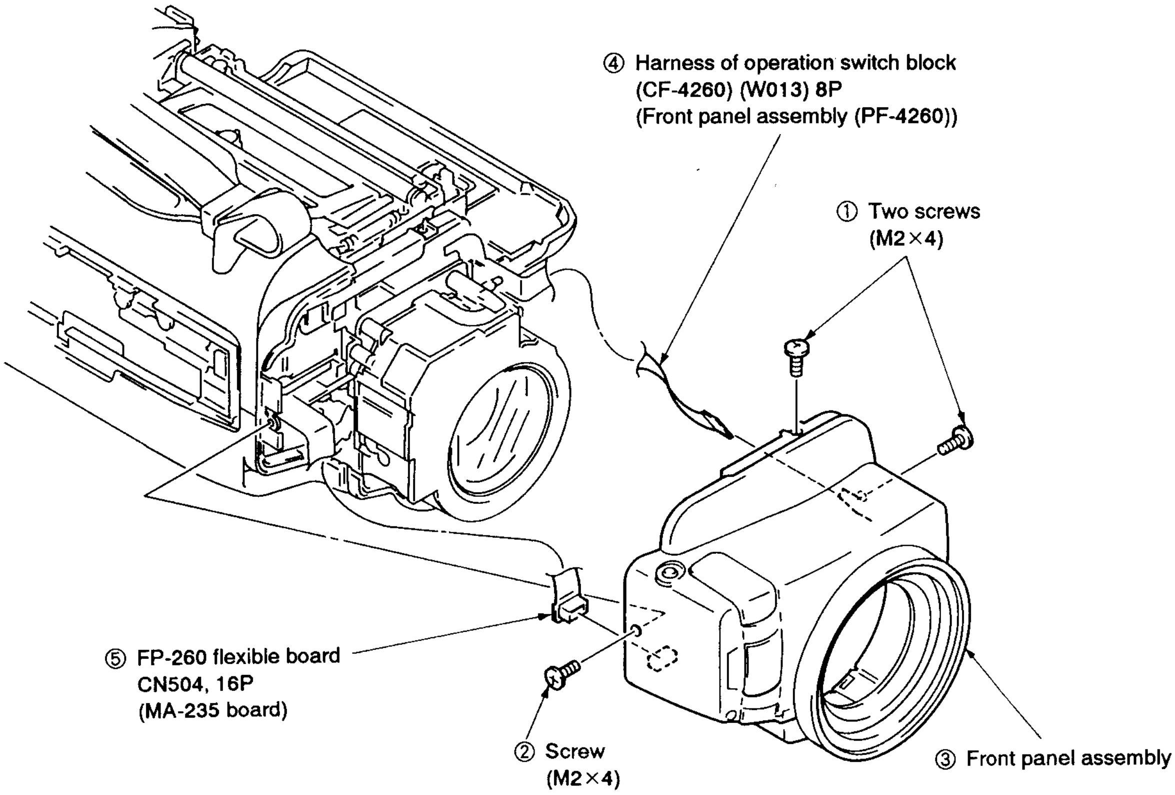
① Eight screws
(M2×4)
② Cabinet bottom assembly

2-2. REMOVAL OF CASSETTE LID ASSEMBLY

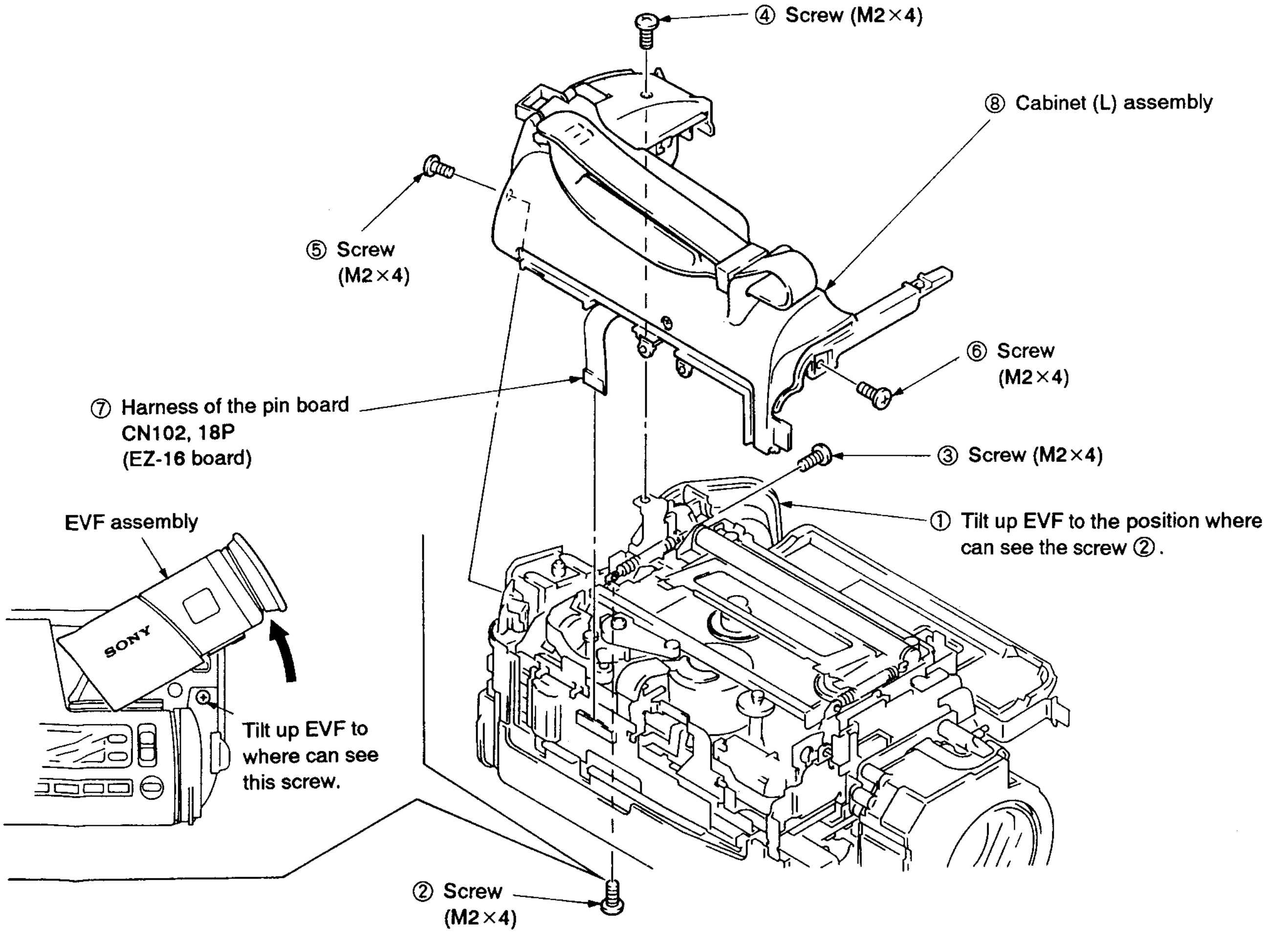


② Two screws
(M2×4)
③ Remove the cassette lid assembly
in direction of arrow.
① Open the grip lid.

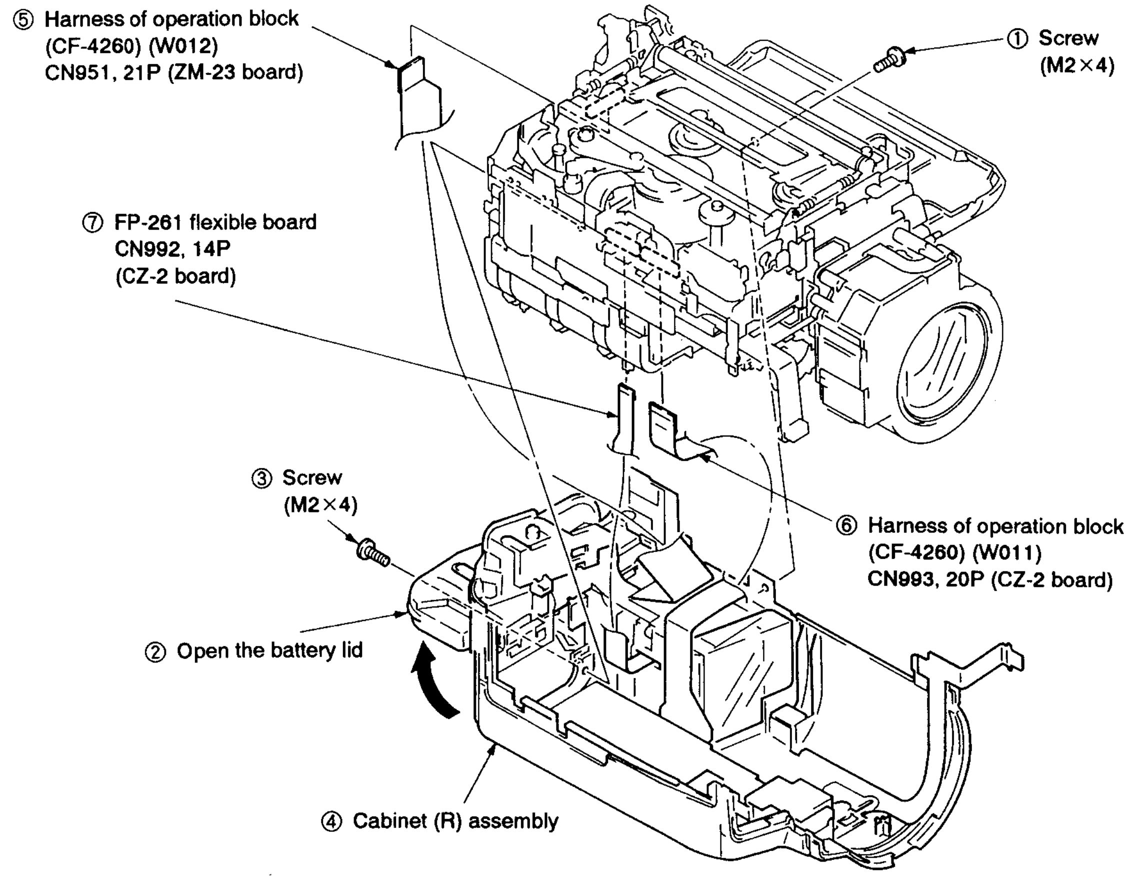
2-3. REMOVAL OF FRONT PANEL BLOCK


④ Harness of operation switch block
(CF-4260) (W013) 8P
(Front panel assembly (PF-4260))
① Two screws
(M2×4)
⑤ FP-260 flexible board
CN504, 16P
(MA-235 board)
② Screw
(M2×4)
③ Front panel assembly

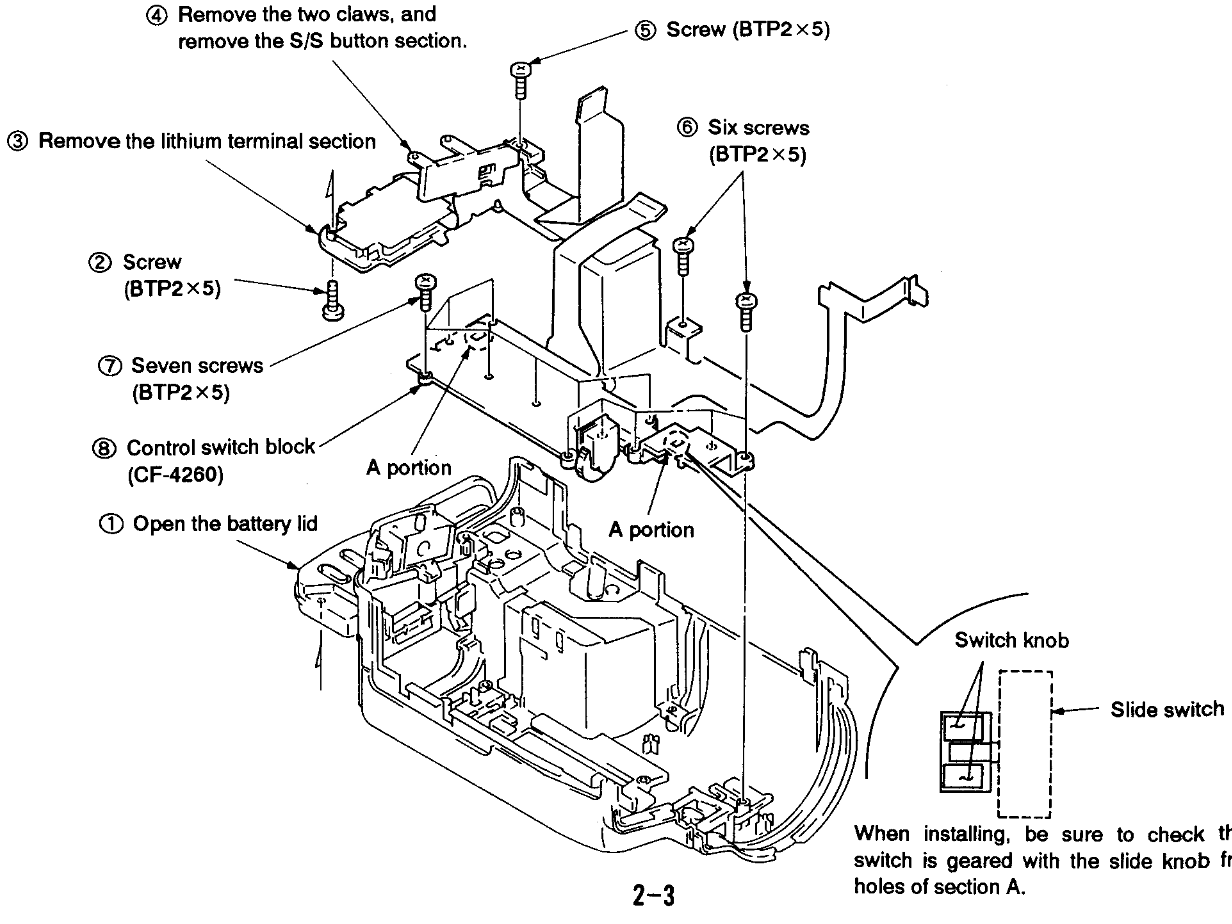
2-4. REMOVAL OF CABINET (L) ASSEMBLY


④ Screw (M2×4)
⑧ Cabinet (L) assembly
⑤ Screw
(M2×4)
⑥ Screw
(M2×4)
⑦ Harness of the pin board
CN102, 18P
(EZ-16 board)
③ Screw (M2×4)
EVF assembly
① Tilt up EVF to the position where
can see the screw ②.
SONY
Tilt up EVF to
where can see
this screw.
② Screw
(M2×4)

2-5. REMOVAL OF CABINET (R) ASSEMBLY

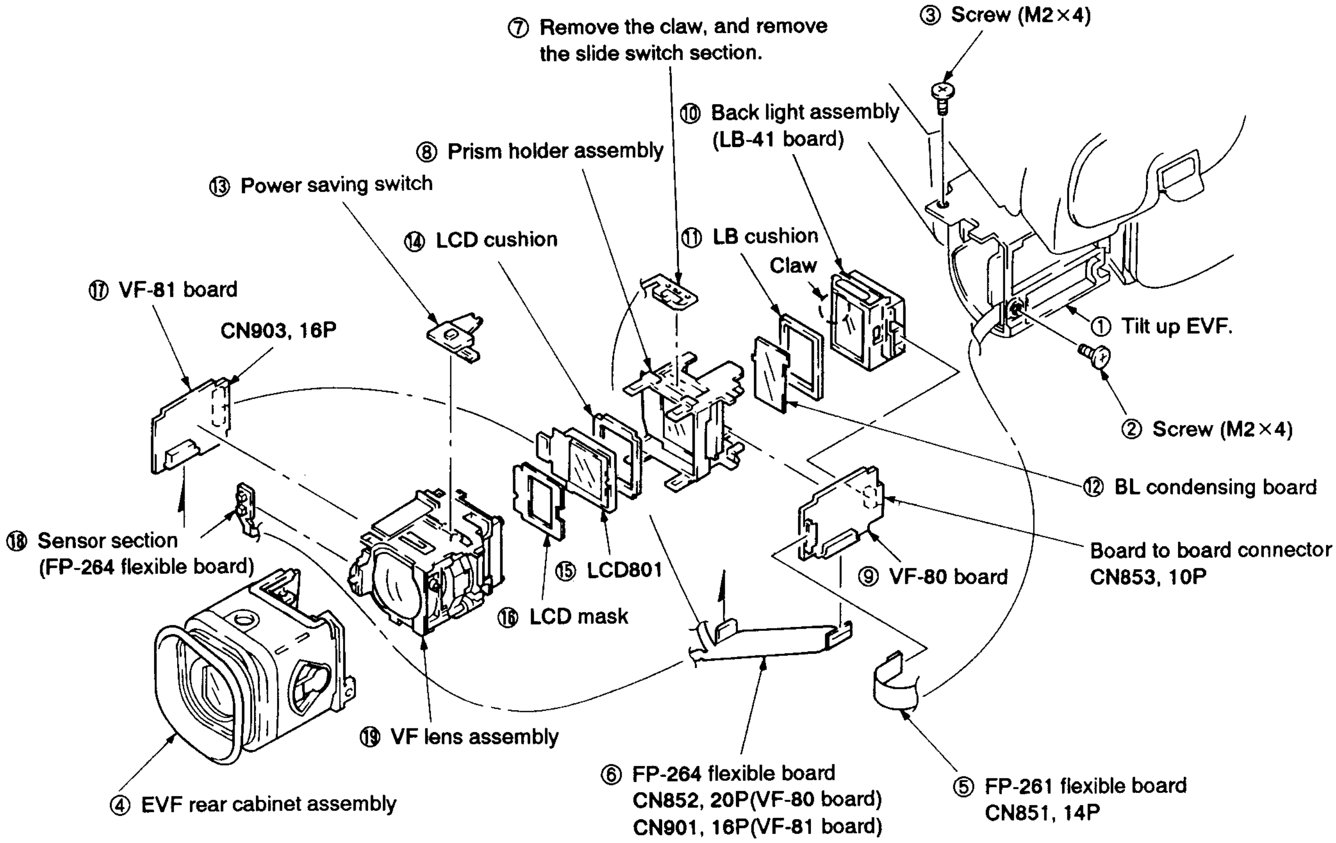

⑤ Harness of operation block
(CF-4260) (W012)
CN951, 21P (ZM-23 board)
① Screw
(M2×4)
⑦ FP-261 flexible board
CN992, 14P
(CZ-2 board)
③ Screw
(M2×4)
⑥ Harness of operation block
(CF-4260) (W011)
CN993, 20P (CZ-2 board)
② Open the battery lid
④ Cabinet (R) assembly

2-6. REMOVAL OF CONTROL SWITCH BLOCK (CF-4260)

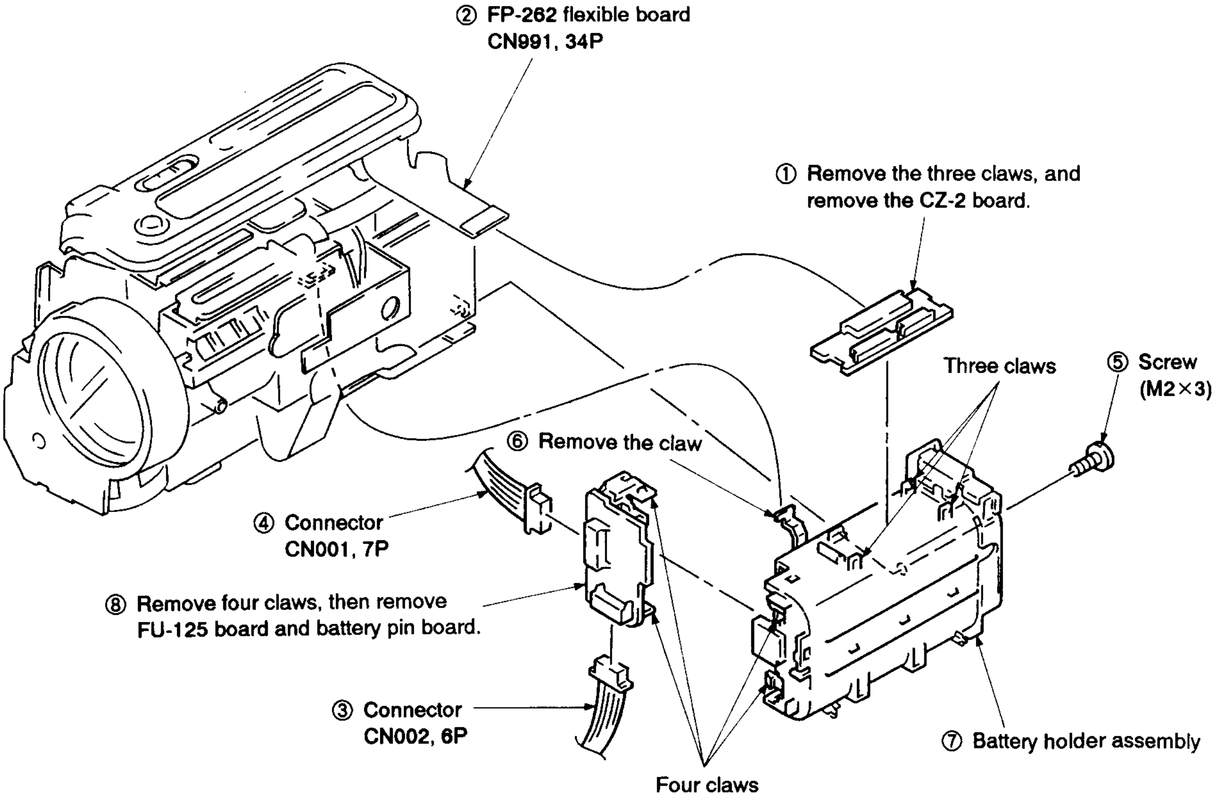

④ Remove the two claws, and
remove the S/S button section.
⑤ Screw (BTP2×5)
③ Remove the lithium terminal section
⑥ Six screws
(BTP2×5)
② Screw
(BTP2×5)
⑦ Seven screws
(BTP2×5)
⑧ Control switch block
(CF-4260)
A portion
① Open the battery lid
A portion
Switch knob
Slide switch

When installing, be sure to check the slide switch is geared with the slide knob from two holes of section A.

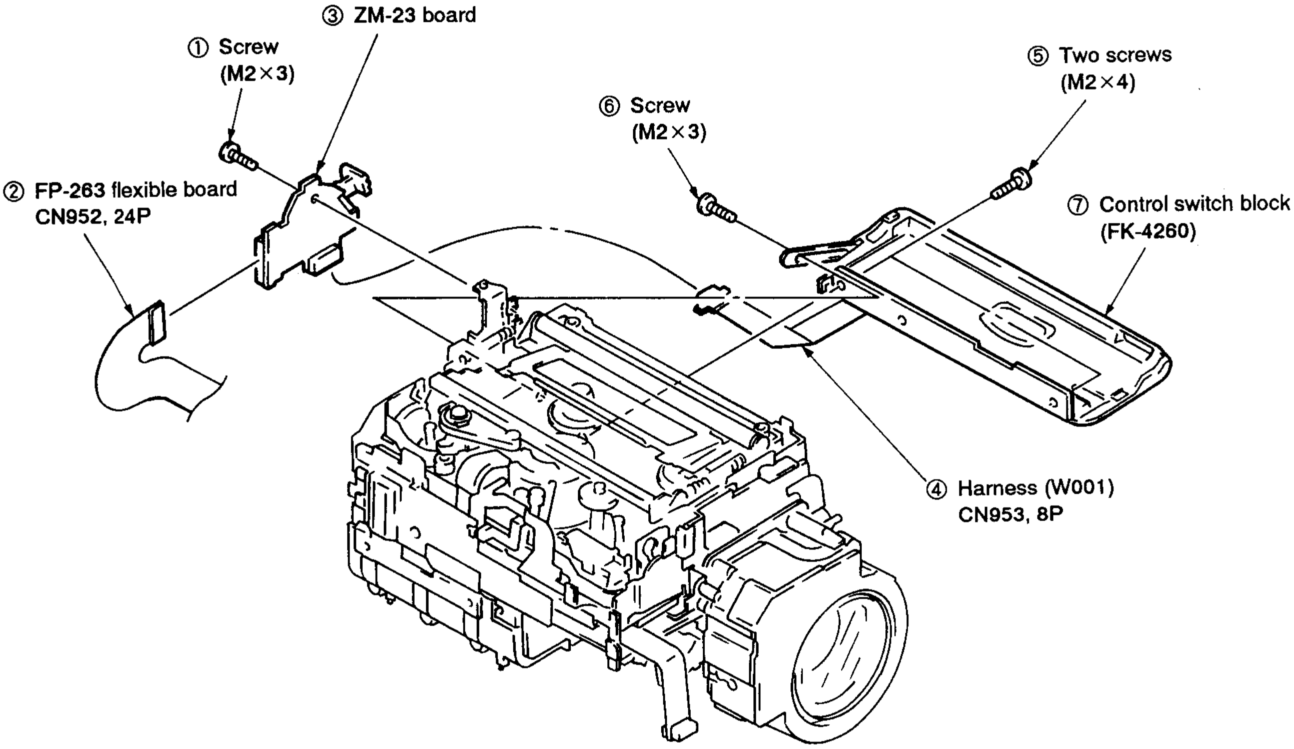
2-7. REMOVAL OF EVF ASSEMBLY (VF-80, VF-81, LB-41 BOARD)


⑦ Remove the claw, and remove the slide switch section.
③ Screw (M2×4)
⑩ Back light assembly (LB-41 board)
⑧ Prism holder assembly
⑬ Power saving switch
⑭ LCD cushion
⑪ LB cushion
Claw
⑰ VF-81 board
CN903, 16P
① Tilt up EVF.
② Screw (M2×4)
⑫ BL condensing board
Board to board connector CN853, 10P
⑱ Sensor section (FP-264 flexible board)
⑮ LCD801
⑨ VF-80 board
⑯ LCD mask
⑲ VF lens assembly
⑥ FP-264 flexible board CN852, 20P(VF-80 board) CN901, 16P(VF-81 board)
⑤ FP-261 flexible board CN851, 14P
④ EVF rear cabinet assembly

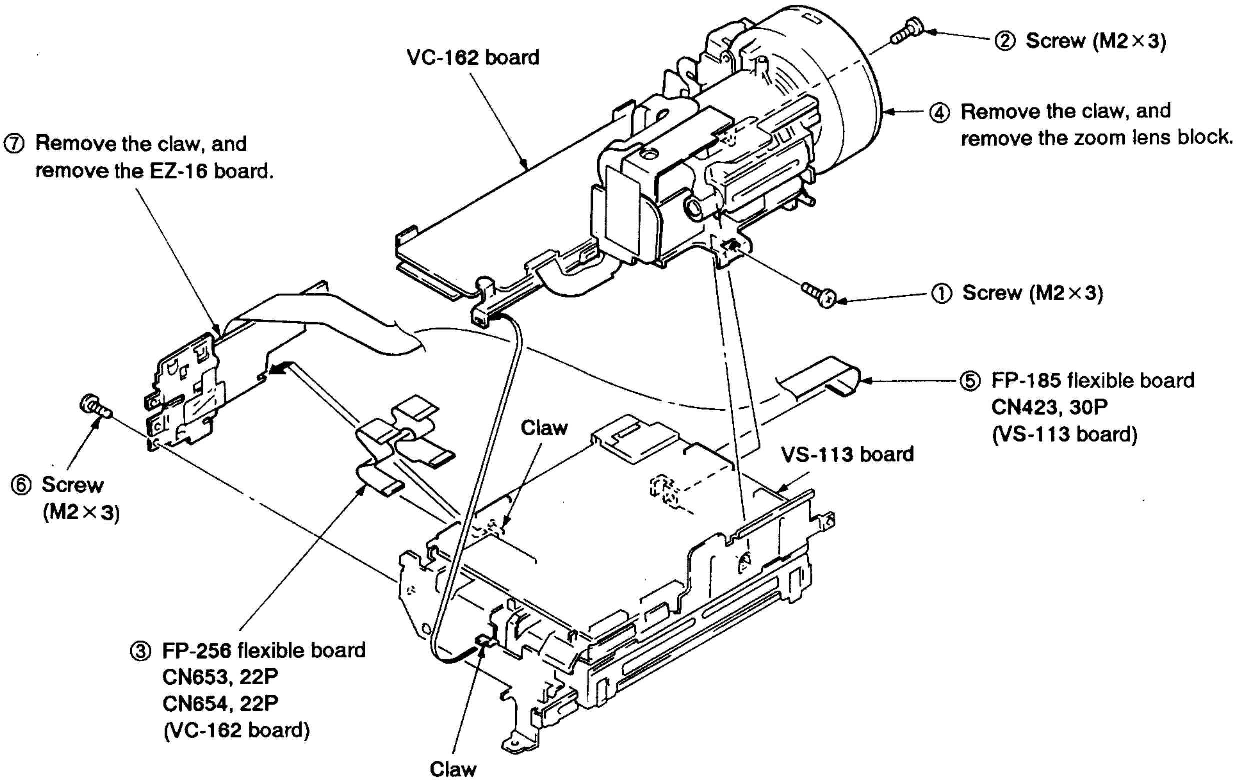
2-8. REMOVAL OF CZ-2 BOARD AND BATTERY HOLDER (FU-125 BOARD)


② FP-262 flexible board CN991, 34P
① Remove the three claws, and remove the CZ-2 board.
Three claws
⑤ Screw (M2×3)
⑥ Remove the claw
④ Connector CN001, 7P
⑧ Remove four claws, then remove FU-125 board and battery pin board.
③ Connector CN002, 6P
⑦ Battery holder assembly
Four claws

2-9. REMOVAL OF CONTROL SWITCH BLOCK (FK-4260) AND ZM-23 BOARD


③ ZM-23 board
① Screw
(M2×3)
⑤ Two screws
(M2×4)
⑥ Screw
(M2×3)
② FP-263 flexible board
CN952, 24P
⑦ Control switch block
(FK-4260)
④ Harness (W001)
CN953, 8P

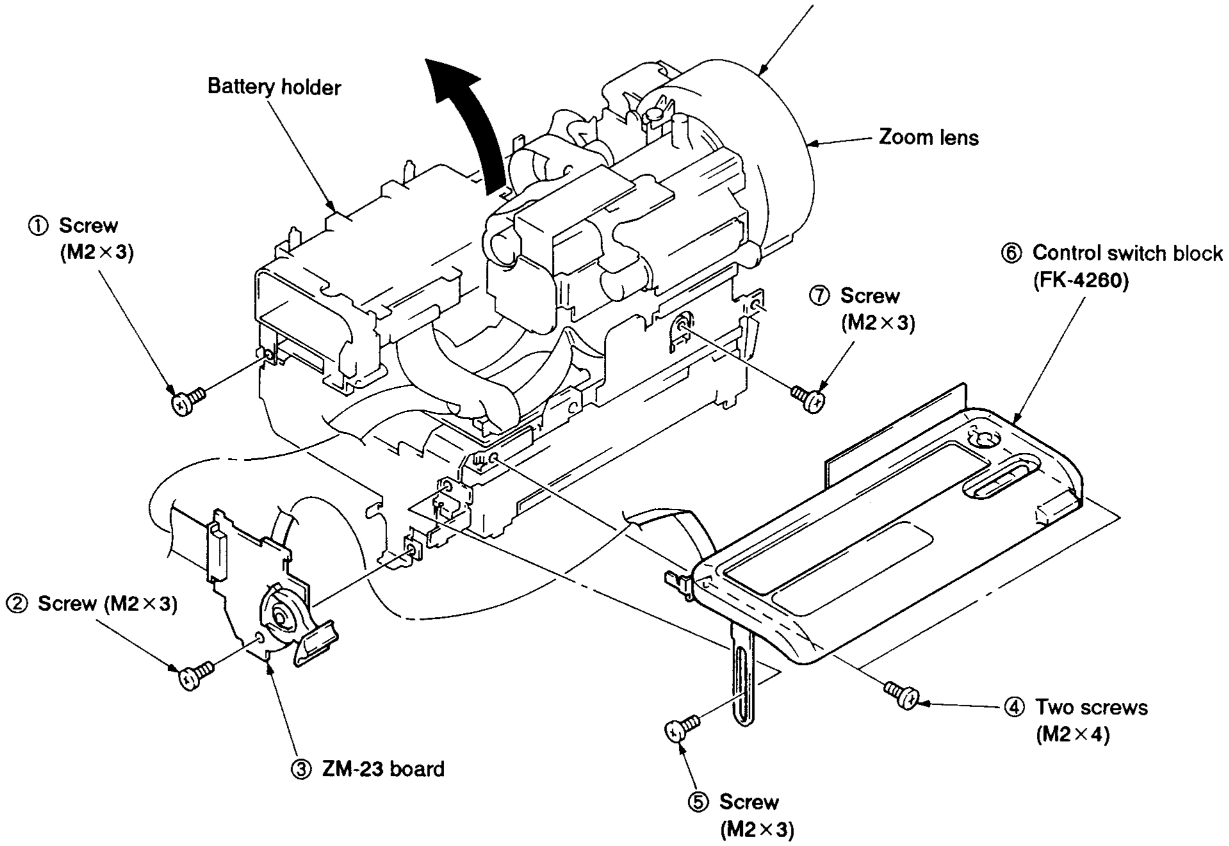
2-10. REMOVAL OF ZOOM LENS BLOCK (VCL-4216VA) AND EZ-16 BOARD

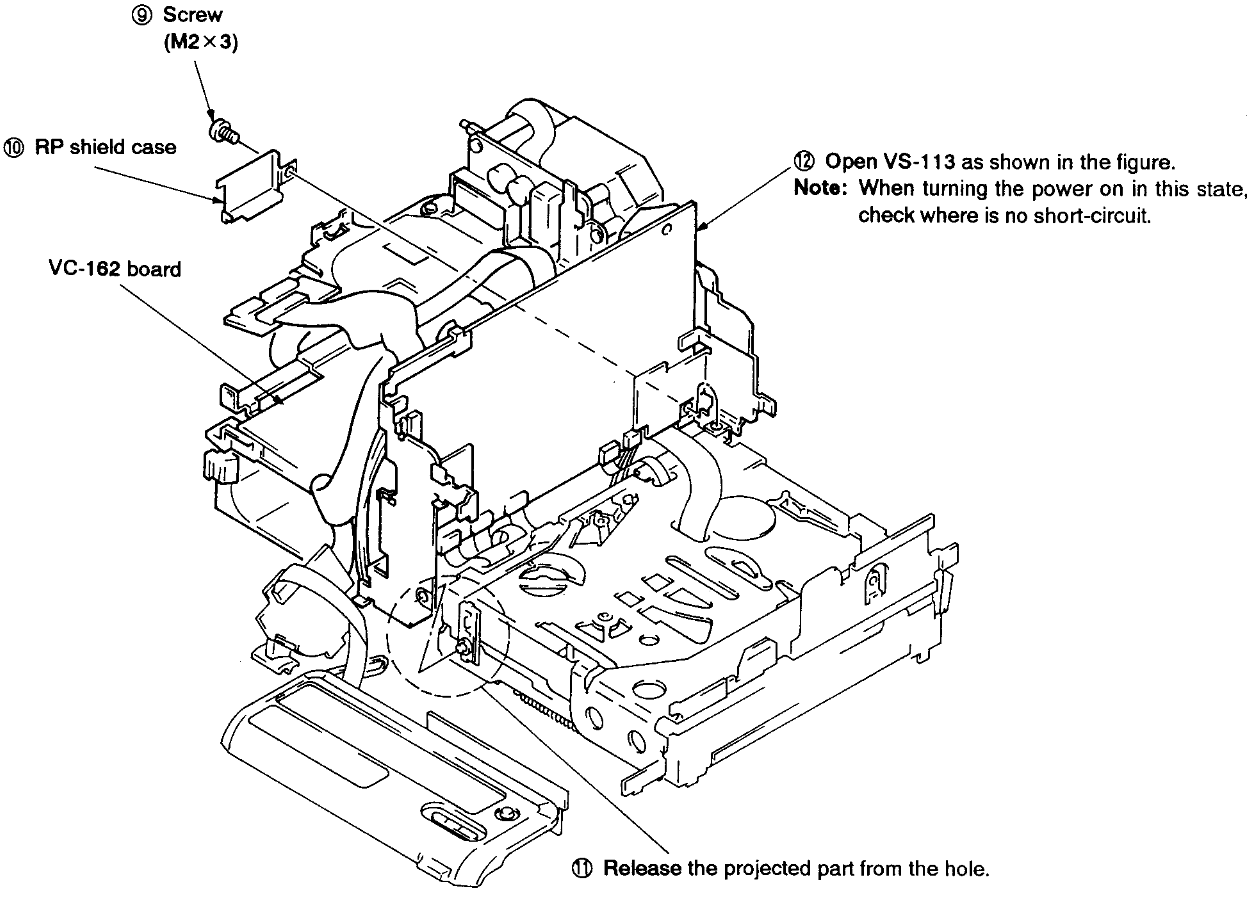

② Screw (M2×3)
VC-162 board
④ Remove the claw, and
remove the zoom lens block.
⑦ Remove the claw, and
remove the EZ-16 board.
① Screw (M2×3)
⑤ FP-185 flexible board
CN423, 30P
(VS-113 board)
Claw
VS-113 board
⑥ Screw
(M2×3)
③ FP-256 flexible board
CN653, 22P
CN654, 22P
(VC-162 board)
Claw

2-11. OPENING OF VS-113 BOARD (SERVICE POSITION)

Note: Be careful not to damage kind of harness of flexible boards.

⑧ Open the zoom lens, VC-162 board and battery holder in direction of arrow.


Battery holder
Zoom lens
① Screw (M2×3)
⑥ Control switch block (FK-4260)
⑦ Screw (M2×3)
② Screw (M2×3)
④ Two screws (M2×4)
③ ZM-23 board
⑤ Screw (M2×3)

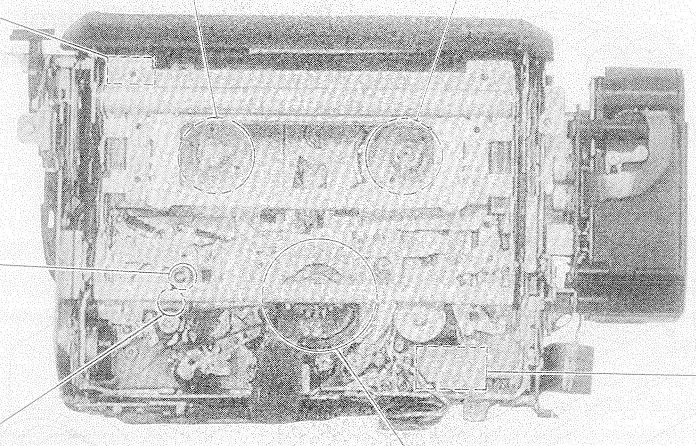

⑨ Screw (M2×3)
⑩ RP shield case
VC-162 board

⑫ Open VS-113 as shown in the figure.
Note: When turning the power on in this state, check where is no short-circuit.

⑪ Release the projected part from the hole.

2-12. INTERNAL VIEWS

— Right side —


S002
REC PROOF, ME/MP
Push switch
1-692-614-11
T reel table assembly
X-3943-732-1
S reel table assembly
X-3943-733-1
Pinch roller
M903
Loading motor assembly
X-3943-127-1
M902
Capstan motor (SCE-0401A)
8-835-498-12

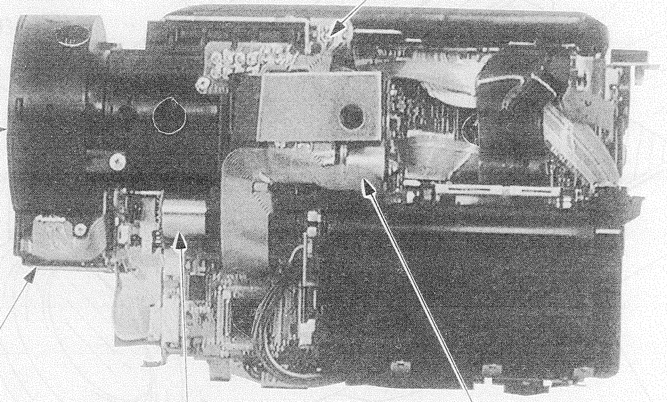
M901 (TR3000) NTSC

Drum Assembly	A-7048-714-A (DGH-89F-R)
Upper Rotary Drum Assembly	A-7049-495-A (DGR-89-R-(1)) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-498-A(DGR-89-R-(2)) (Color mark: Red, Red/Red, Blue, Blue/Red)

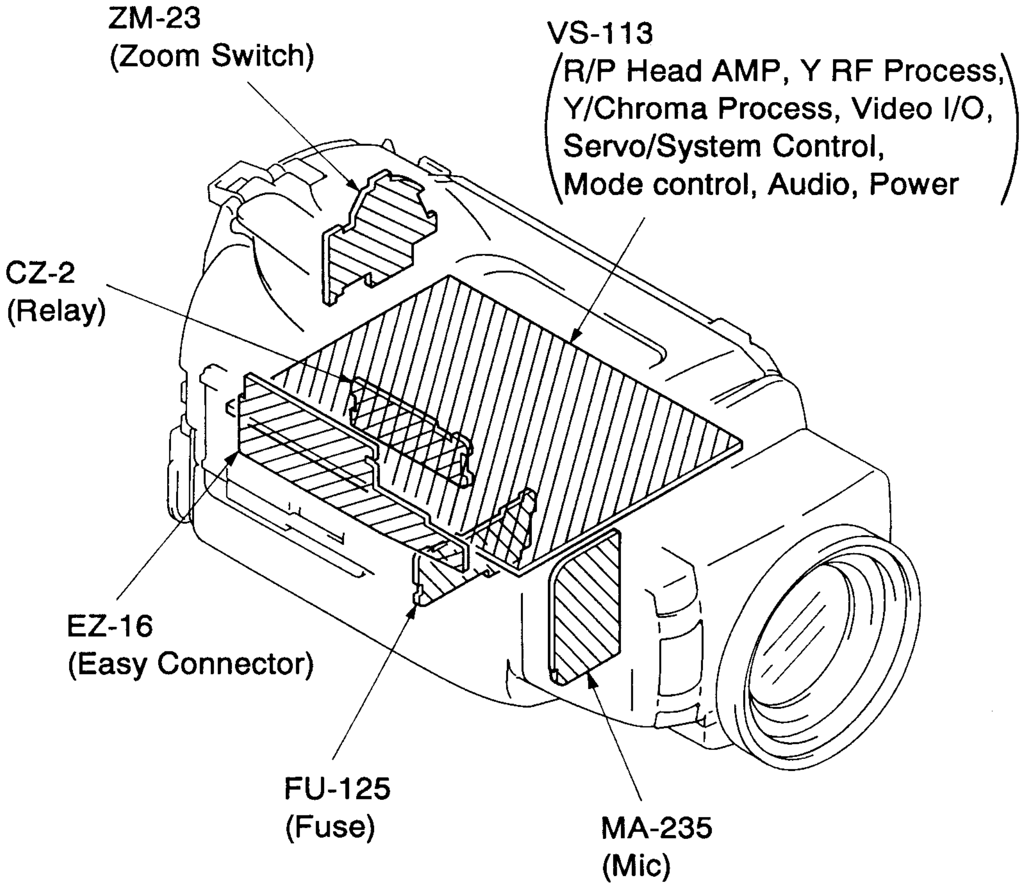
M901 (TR3000E) PAL

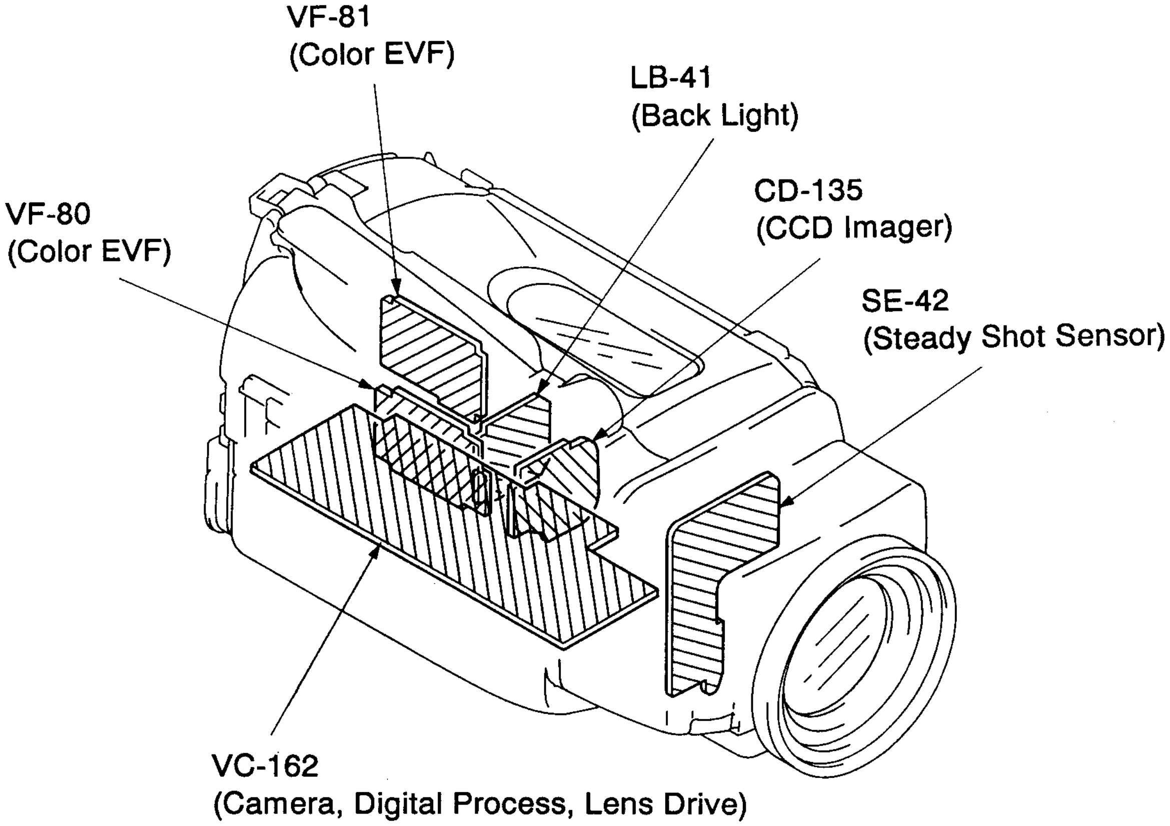
Drum Assembly	A-7048-716-A (DGH-80E-R)
Upper Rotary Drum Assembly	A-7049-461-A (DGR-80-R-(1)) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-464-A(DGR-80-R-(2)) (Color mark: Red, Red/Red, Blue, Blue/Red)

— Left side —


M906
ZOOM motor
3-709-037-01
Zoom lens
VAP unit
A-7030-674-A
M904
IRIS meter
M905
FOCUS motor
3-709-036-01

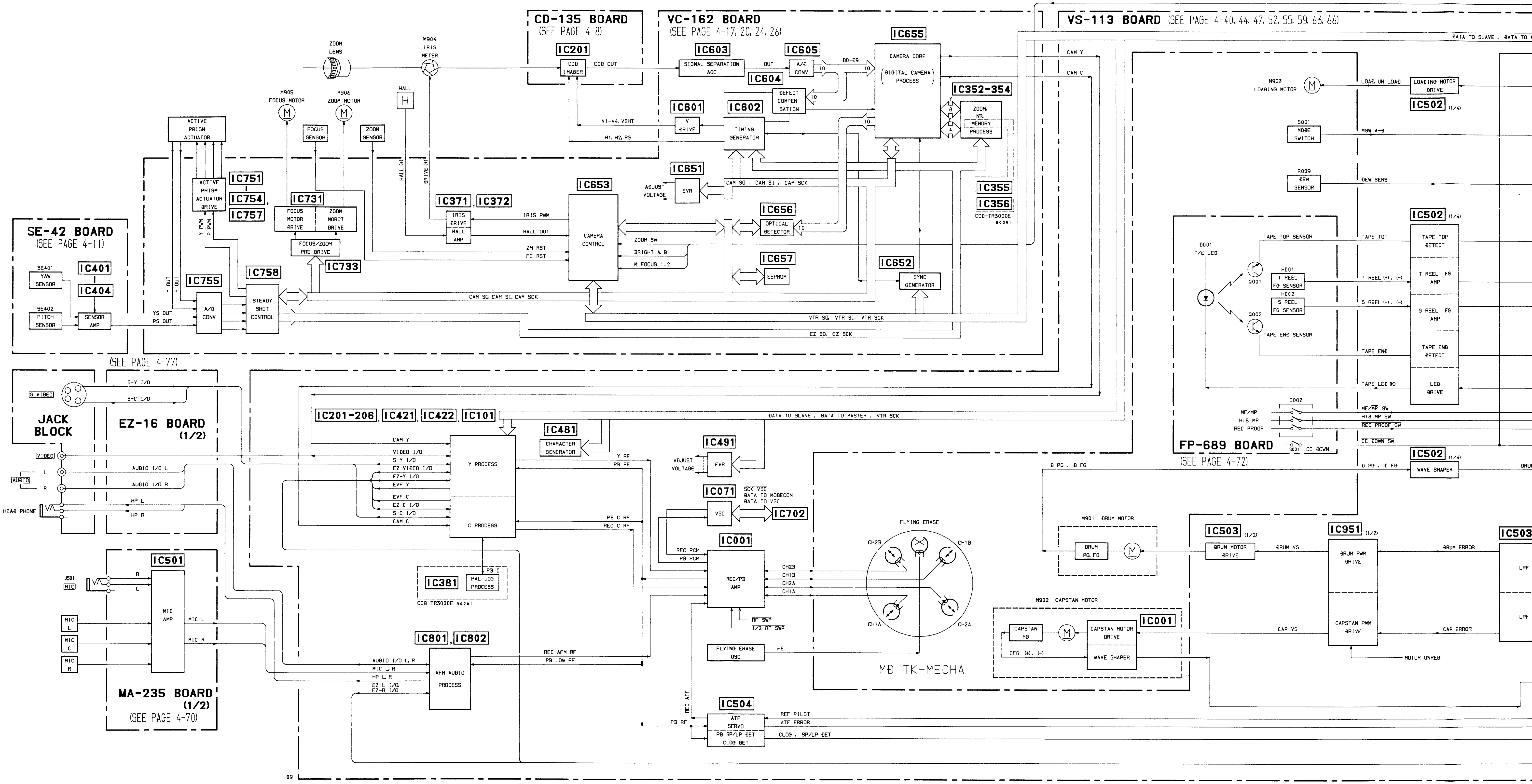
2-13. CIRCUIT BOARDS LOCATION

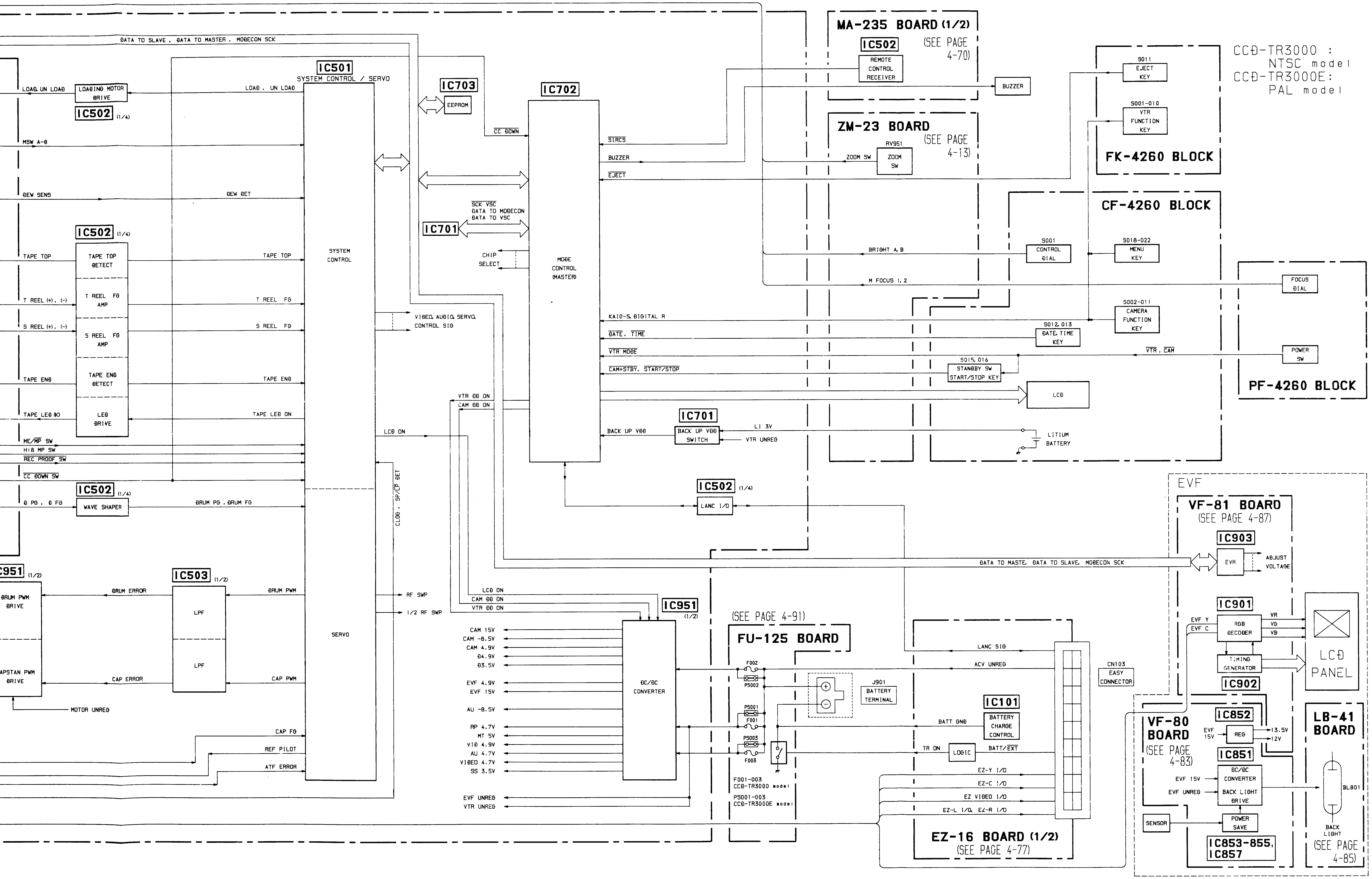

ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process,
Y/Chroma Process, Video I/O,
Servo/System Control,
Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)


VF-81
(Color EVF)
LB-41
(Back Light)
CD-135
(CCD Imager)
VF-80
(Color EVF)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

SECTION 3
BLOCK DIAGRAMS

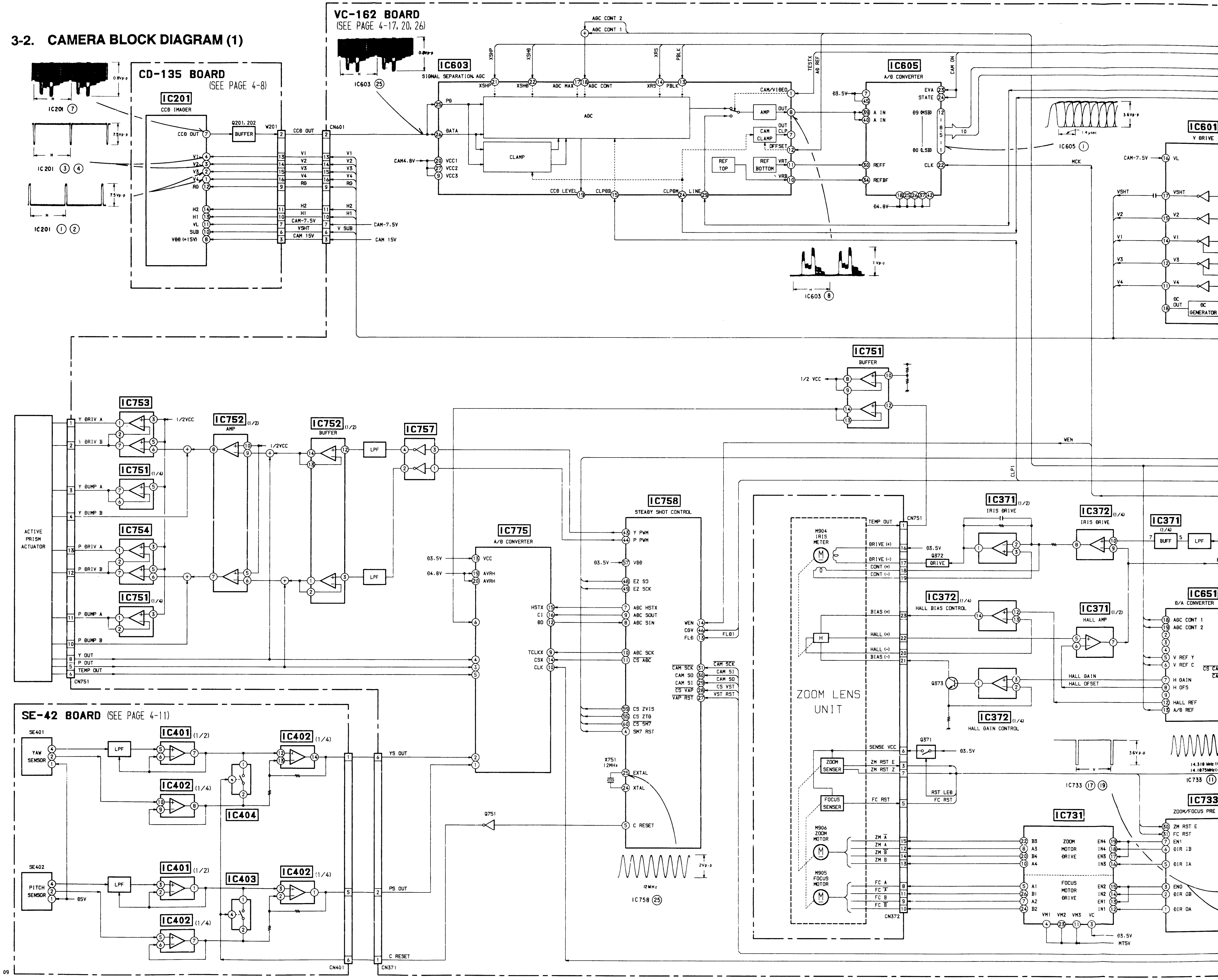
3-1. OVERALL BLOCK DIAGRAM


CD-135 BOARD
(SEE PAGE 4-8)
IC201
CCD IMAGER
CCD OUT
VC-162 BOARD
(SEE PAGE 4-17, 20, 24, 26)
IC603
SIGNAL SEPARATION AGC
OUT
IC605
A/D CONV
D0-D9
10
IC604
DEFECT COMPEN-SATION
IC655
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC352-354
ZOOM, NR, MEMORY PROCESS
IC601
V DRIVE
IC602
TIMING GENERATOR
V1-V4, VSHT
H1, H2, RG
IC651
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC355
IC356
CCD-TR3000E model
IC653
CAMERA CONTROL
IC656
OPTICAL DETECTOR
IC657
EEPROM
IC652
SYNC GENERATOR
ZOOM LENS
M904 IRIS METER
M905 FOCUS MOTOR
M906 ZOOM MOTOR
HALL
H
ACTIVE PRISM ACTUATOR
FOCUS SENSOR
ZOOM SENSOR
HALL (+)
DRIVE (+)
IC751
IC754
IC757
ACTIVE PRISM ACTUATOR DRIVE
IC731
FOCUS MOTOR DRIVE
ZOOM MOROT DRIVE
FOCUS/ZOOM PRE DRIVE
IC733
IC371
IC372
IRIS DRIVE
HALL AMP
IRIS PWM
HALL OUT
ZM RST
FC RST
ZOOM SW
BRIGHT A, B
M FOCUS 1, 2
Y PWM
P PWM
Y OUT
P OUT
IC755
A/D CONV
IC758
STEADY SHOT CONTROL
CAM SO, CAM SI, CAM SCK
VTR SO, VTR SI, VTR SCK
EZ SO, EZ SCK
SE-42 BOARD
(SEE PAGE 4-11)
SE401 YAW SENSOR
IC401
IC404
SE402 PITCH SENSOR
SENSOR AMP
YS OUT
PS OUT
(SEE PAGE 4-77)
S VIDEO
S-Y I/O
S-C I/O
JACK BLOCK
EZ-16 BOARD (1/2)
VIDEO
AUDIO
L
R
AUDIO I/O L
AUDIO I/O R
HEAD PHONE
HP L
HP R
IC201-206
IC421
IC422
IC101
DATA TO SLAVE, DATA TO MASTER, VTR SCK
IC481
CHARACTER GENERATOR
CAM Y
VIDEO I/O
S-Y I/O
EZ VIDEO I/O
EZ-Y I/O
EVF Y
EVF C
EZ-C I/O
S-C I/O
CAM C
Y PROCESS
C PROCESS
Y RF
PB RF
PB C RF
REC C RF
PB C
IC381
PAL JOG PROCESS
CCD-TR3000E model
IC491
ADJUST VOLTAGE
EVR
IC071
VSC
SCK VSC
DATA TO MODECON
DATA TO VSC
IC702
IC001
REC PCM
PB PCM
REC/PB AMP
CH2B
CH1B
CH2A
CH1A
RF SWP
1/2 RF SWP
FLYING ERASE OSC
FE
FLYING ERASE
CH2B
CH1B
CH1A
CH2A
MD TK-MECHA
IC501
J501
MIC
R
L
MIC AMP
MIC L
MIC R
MIC L
MIC C
MIC R
MA-235 BOARD (1/2)
(SEE PAGE 4-70)
IC801
IC802
AUDIO I/O L, R
MIC L, R
HP L, R
EZ-L I/O
EZ-R I/O
AFM AUDIO PROCESS
REC AFM RF
PB LOW RF
IC504
REC ATF
PB RF
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG, SP/LP DET
09
VS-113 BOARD (SEE PAGE 4-40, 44, 47, 52, 55, 59, 63, 66)
DATA TO SLAVE, DATA TO
CAM Y
CAM C
M903 LOADING MOTOR
M
LOAD, UN LOAD
LOADING MOTOR DRIVE
IC502 (1/4)
S001 MODE SWITCH
MSW A-D
R009 DEW SENSOR
DEW SENS
IC502 (1/4)
TAPE TOP SENSOR
TAPE TOP
TAPE TOP DETECT
D001 T/E LED
Q001
H001 T REEL FG SENSOR
T REEL (+), (-)
T REEL FG AMP
Q002
H002 S REEL FG SENSOR
S REEL (+), (-)
S REEL FG AMP
TAPE END SENSOR
TAPE END
TAPE END DETECT
TAPE LED ON
LED DRIVE
S002
ME/MP
Hi8 MP
REC PROOF
ME/MP SW
Hi8 MP SW
REC PROOF SW
CC DOWN SW
FP-689 BOARD
S001 CC DOWN
(SEE PAGE 4-72)
D PG, D FG
IC502 (1/4)
WAVE SHAPER
DRUM
M901 DRUM MOTOR
DRUM PG, FG
M
IC503 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC951 (1/2)
DRUM PWM DRIVE
DRUM ERROR
IC503
LPF
M902 CAPSTAN MOTOR
CAPSTAN FG
M
CAPSTAN MOTOR DRIVE
IC001
CFG (+), (-)
WAVE SHAPER
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
LPF
MOTOR UNREG

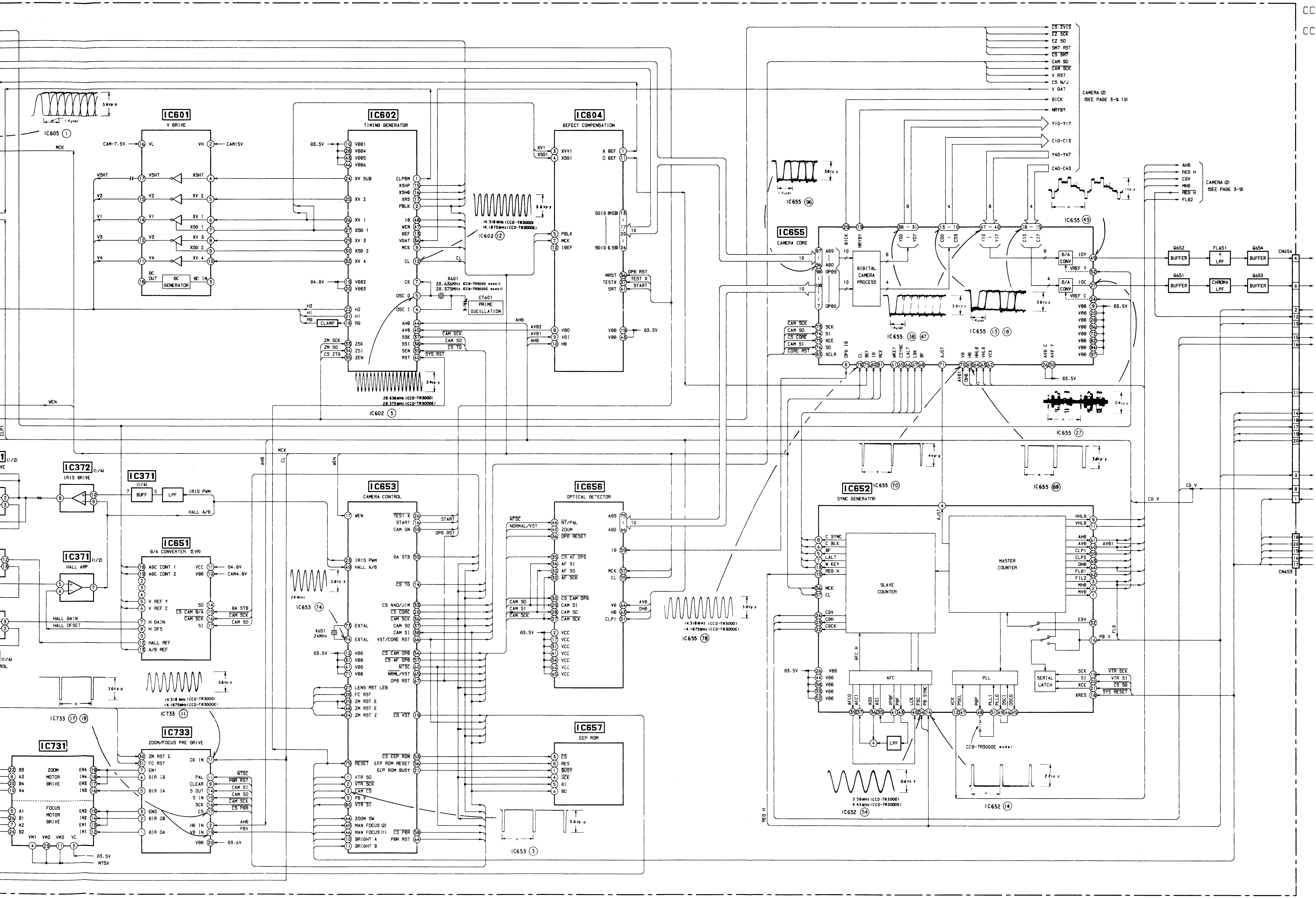

DATA TO SLAVE . DATA TO MASTER . MODECON SCK
IC501
SYSTEM CONTROL / SERVO
LOAD. UN LOAD
LOADING MOTOR DRIVE
IC502 (1/4)
MSW A-D
DEW SENS
DEW DET
IC502 (1/4)
TAPE TOP
TAPE TOP DETECT
T REEL (+), (-)
T REEL FG AMP
T REEL FG
S REEL (+), (-)
S REEL FG AMP
S REEL FG
TAPE END
TAPE END DETECT
TAPE LED ON
LED DRIVE
ME/MP SW
HI8 MP SW
REC PROOF SW
CC DOWN SW
IC502 (1/4)
D PG . D FG
WAVE SHAPER
DRUM PG . DRUM FG
SYSTEM CONTROL
SERVO
IC951 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DRUM ERROR
CAP ERROR
MOTOR UNREG
IC503 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
CAP FG
REF PILOT
ATF ERROR
IC703
EEPROM
CC DOWN
IC702
MODE CONTROL (MASTER)
SCK VSC
DATA TO MODECON
DATA TO VSC
IC701
CHIP SELECT
VIDEO, AUDIO, SERVO, CONTROL SIG
SP/LP DET
CLOG
LCD ON
VTR DD ON
CAM DD ON
RF SWP
1/2 RF SWP
SIRCS
BUZZER
EJECT
KAIO-S, DIGITAL R
DATE, TIME
VTR MODE
CAM+STBY, START/STOP
BACK UP VDD
IC701
BACK UP VDD SWITCH
LI 3V
VTR UNREG
LITIUM BATTERY
LCD
IC502 (1/4)
LANC I/O
MA-235 BOARD (1/2)
IC502
(SEE PAGE 4-70)
REMOTE CONTROL RECEIVER
BUZZER
ZM-23 BOARD
(SEE PAGE 4-13)
RV951
ZOOM SW
FK-4260 BLOCK
S011
EJECT KEY
S001-010
VTR FUNCTION KEY
CF-4260 BLOCK
BRIGHT A, B
S001
CONTROL DIAL
S018-022
MENU KEY
M FOCUS 1, 2
S002-011
CAMERA FUNCTION KEY
S012, 013
DATE, TIME KEY
S015, 016
STANDBY SW
START/STOP KEY
PF-4260 BLOCK
FOCUS DIAL
POWER SW
VTR, CAM
IC951 (1/2)
DC/DC CONVERTER
CAM 15V
CAM -8.5V
CAM 4.9V
D4.9V
D3.5V
EVF 4.9V
EVF 15V
AU -8.5V
RP 4.7V
MT 5V
VID 4.9V
AU 4.7V
VIDEO 4.7V
SS 3.5V
EVF UNREG
VTR UNREG
(SEE PAGE 4-91)
FU-125 BOARD
F002
PS002
PS001
F001
PS003
F003
J901
BATTERY TERMINAL
F001-003 CCD-TR3000 model
PS001-003 CCD-TR3000E model
DATA TO MASTE, DATA TO SLAVE, MODECON SCK
LANC SIG
ACV UNREG
BATT GND
IC101
BATTERY CHARGE CONTROL
TR ON
LOGIC
BATT/EXT
EZ-Y I/O
EZ-C I/O
EZ VIDEO I/O
EZ-L I/O, EZ-R I/O
CN103
EASY CONNECTOR
EZ-16 BOARD (1/2)
(SEE PAGE 4-77)
EVF
VF-81 BOARD
(SEE PAGE 4-87)
IC903
EVR
ADJUST VOLTAGE
IC901
EVF Y
EVF C
RGB DECODER
VR
VG
VB
TIMING GENERATOR
IC902
LCD PANEL
VF-80 BOARD
(SEE PAGE 4-83)
IC852
EVF 15V
REG
13.5V
12V
IC851
DC/DC CONVERTER
BACK LIGHT DRIVE
EVF 15V
EVF UNREG
SENSOR
POWER SAVE
IC853-855, IC857
LB-41 BOARD
BL801
BACK LIGHT
(SEE PAGE 4-85)

CCD-TR3000 :
NTSC model
CCD-TR3000E:
PAL model

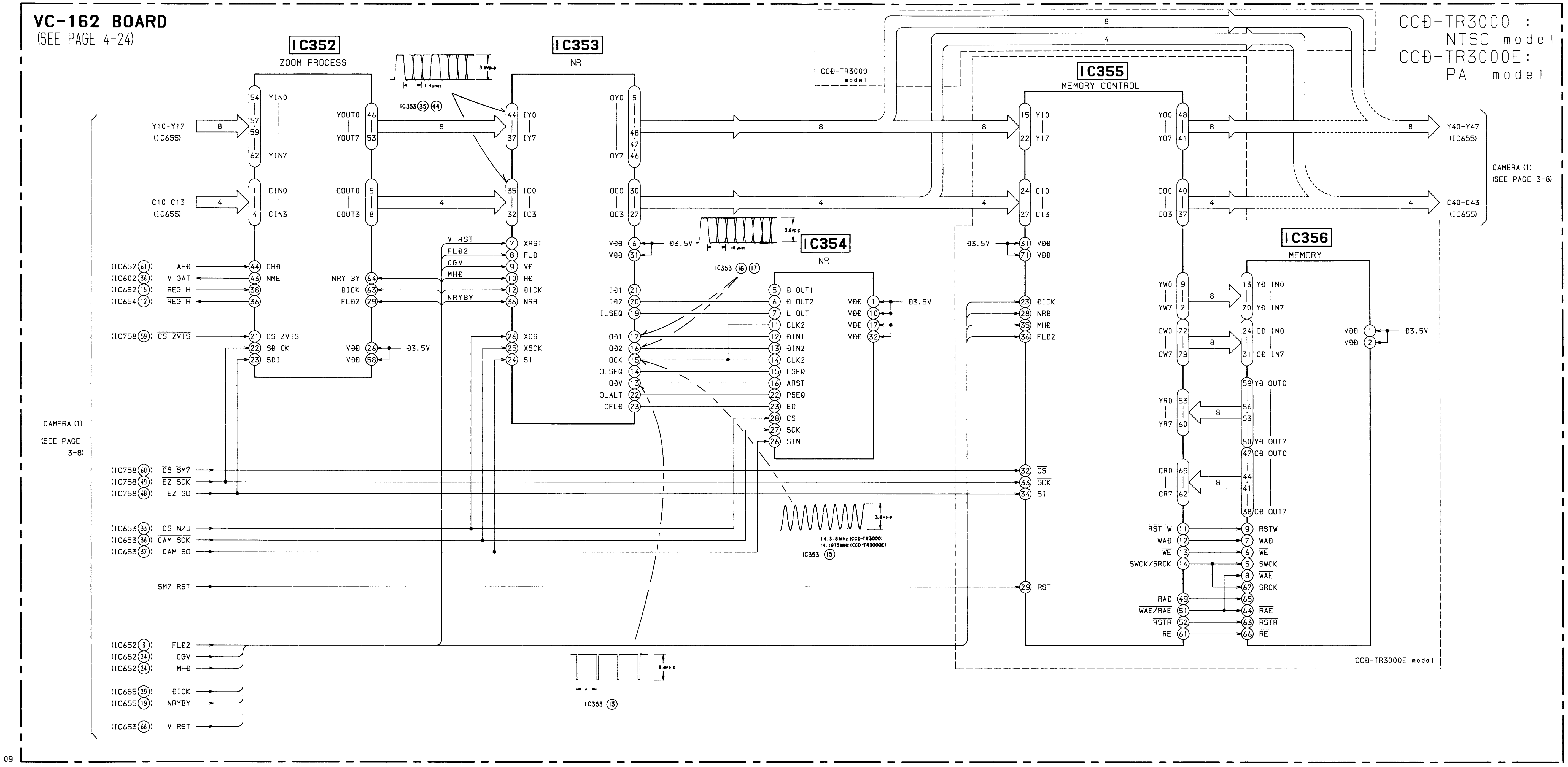
3-2. CAMERA BLOCK DIAGRAM (1)


CD-135 BOARD
(SEE PAGE 4-8)
IC201
CCD IMAGER
CCD OUT
Q201, 202
BUFFER
W201
CN601
V1
V2
V3
V4
RG
H2
H1
VL
SUB
VDD (+15V)
CAM-7.5V
VSHT
CAM 15V
V SUB
IC201 ⑦
IC201 ③ ④
IC201 ① ②
0.8Vp-p
7.5Vp-p
H
VC-162 BOARD
(SEE PAGE 4-17, 20, 26)
IC603
SIGNAL SEPARATION AGC
IC603 ㉕
XSHP
XSHD
AGC MAX
AGC CONT
XRS
PBLK
PG
DATA
AGC
CLAMP
CAM4.8V
VCC1
VCC2
VCC3
CCD LEVEL
CLPOB
CLPDM
LINE
AGC CONT 2
AGC CONT 1
CAM/VIDEO
AMP
OUT
CAM CLAMP
CLP
OFFSET
REF TOP
REF BOTTOM
VRT
VRB
TESTX
AD REF
IC605
A/D CONVERTER
D3.5V
A IN
D9 (MSB)
D0 (LSB)
EVA
STATE
REFF
REFBF
CLK
D4.8V
CAM ON
MCK
IC605 ①
1.4µsec
3.6Vp-p
IC603 ⑧
1Vp-p
IC601
V DRIVE
CAM-7.5V
VL
VSHT
DC OUT
DC GENERATOR
IC751
BUFFER
1/2 VCC
ACTIVE PRISM ACTUATOR
Y DRIV A
Y DRIV B
Y DUMP A
Y DUMP B
P DRIV A
P DRIV B
P DUMP A
P DUMP B
Y OUT
P OUT
TEMP OUT
CN751
IC753
IC751 (1/4)
IC754
IC752 (1/2)
AMP
IC752 (1/2)
BUFFER
1/2VCC
LPF
IC757
IC775
A/D CONVERTER
D3.5V
D4.8V
VCC
AVRH
HSTX
CI
DO
TCLKX
CSX
CLK
IC758
STEADY SHOT CONTROL
Y PWM
P PWM
VDD
EZ SO
EZ SCK
ADC HSTX
ADC SOUT
ADC SIN
ADC SCK
CS ADC
WEN
CGV
FLD
CAM SCK
CAM SO
CAM SI
CS VAP
VAP RST
CS ZVIS
CS ZTG
CS SHT
SHT RST
X751
12MHz
EXTAL
XTAL
C RESET
Q751
2Vp-p
12MHz
IC758 ㉕
CLP1
ZOOM LENS UNIT
M904 IRIS METER
TEMP OUT
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
SENSE VCC
ZOOM SENSER
ZM RST E
ZM RST Z
FOCUS SENSER
FC RST
M906 ZOOM MOTOR
M905 FOCUS MOTOR
ZM A
ZM B
FC A
FC B
CN372
IC371 (1/2)
IRIS DRIVE
Q372
DRIVE
IC372 (1/4)
IRIS DRIVE
IC371 (1/4)
BUFF
IC372 (1/4)
HALL BIAS CONTROL
IC371 (1/2)
HALL AMP
Q373
IC372 (1/4)
HALL GAIN CONTROL
HALL GAIN
HALL OFSET
Q371
RST LED
IC651
D/A CONVERTER
AGC CONT 1
AGC CONT 2
V REF Y
V REF C
H GAIN
H OFS
HALL REF
A/D REF
IC733 ⑰ ⑲
IC733 ⑪
14.318 MHz
IC733
ZOOM/FOCUS PRE
ZM RST E
FC RST
EN1
DIR 1B
DIR 1A
EN0
DIR 0B
DIR 0A
IC731
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
B3
A3
B4
A4
A1
B1
A2
B2
EN4
IN4
EN3
IN3
EN2
IN2
EN1
IN1
VM1
VM2
VM3
VC
MT5V
SE-42 BOARD (SEE PAGE 4-11)
SE401
YAW SENSOR
SE402
PITCH SENSOR
BSV
IC401 (1/2)
IC402 (1/4)
IC404
IC403
YS OUT
PS OUT
C RESET
CN401
CN371
09

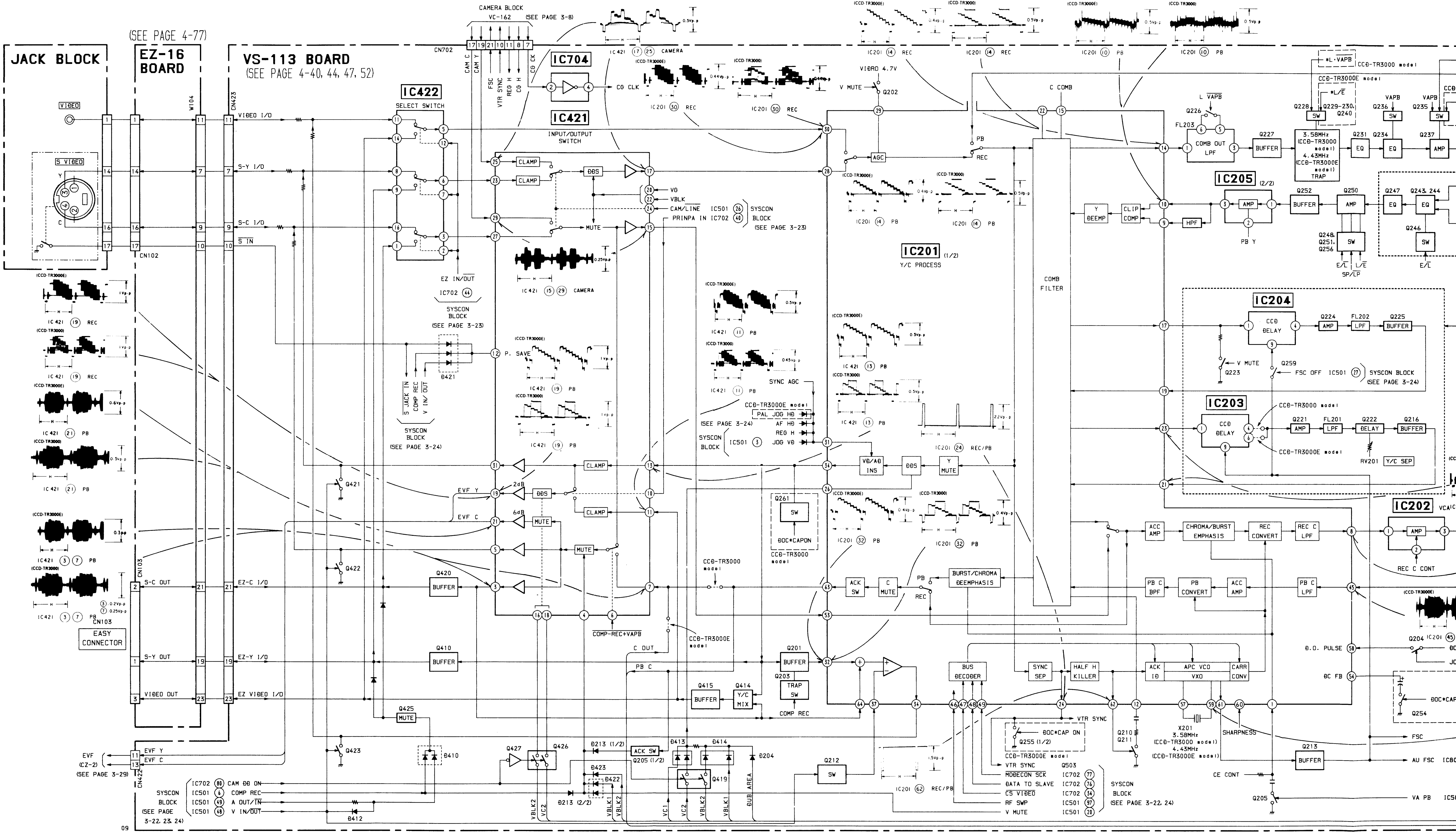
CCD-TR3000 :
NTSC model
CCD-TR3000E:
PAL model

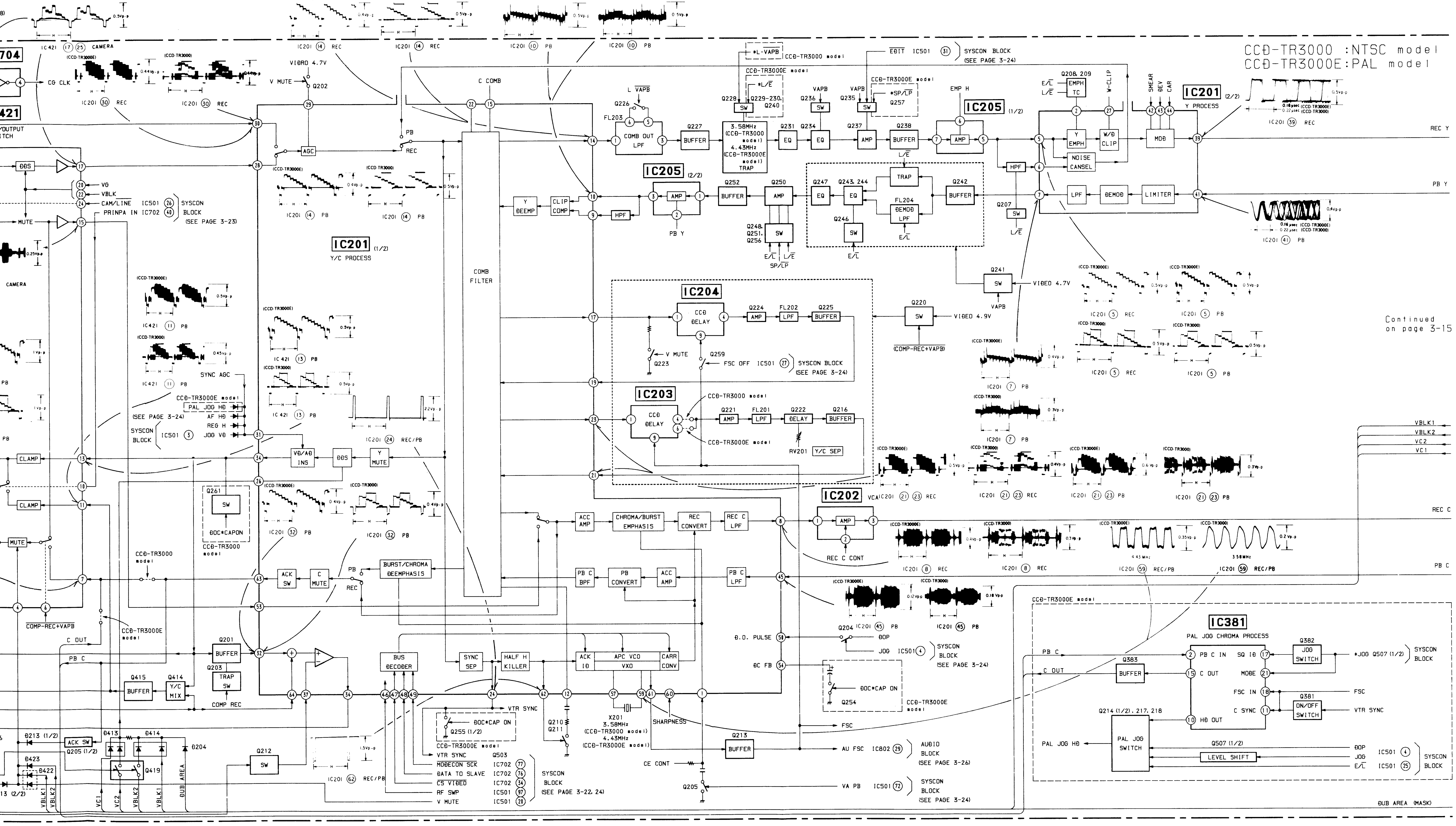

IC601
V DRIVE
IC602
TIMING GENERATOR
IC604
DEFECT COMPENSATION
IC605 ①
IC602 ⑫
IC602 ⑤
X601
28.636MHz (CCD-TR3000 model)
28.375MHz (CCD-TR3000E model)
CT601
PRIME OSCILLATION
14.318MHz (CCD-TR3000)
14.1875MHz (CCD-TR3000E)
DC GENERATOR
CLAMP
IC655
CAMERA CORE
DIGITAL CAMERA PROCESS
IC655 (96)
IC655 (49)
IC655 (38) (47)
IC655 ⑬ ⑱
IC655 (27)
IC655 (70)
IC655 (69)
IC655 (78)
D/A CONV
BUFFER
Y LPF
CHROMA LPF
Q652
Q651
Q654
Q653
FL651
CN654
CAM Y
CAM C
CAMERA (2) (SEE PAGE 3-9, 10)
CAMERA (2) (SEE PAGE 3-9)
VIDEO (1) (VS-113) (SEE PAGE 3-12)
SYSTEM CONTROL (VS-113) (SEE PAGE 3-23)
CN653
IC372
IRIS DRIVE
IC371
BUFF
LPF
IRIS PWM
HALL A/D
HALL AMP
HALL GAIN
HALL OFSET
IC651
D/A CONVERTER (EVR)
IC653
CAMERA CONTROL
IC653 (74)
X651 24MHz
IC653 ③
IC656
OPTICAL DETECTOR
IC657
EEP ROM
IC652
SYNC GENERATOR
SLAVE COUNTER
MASTER COUNTER
AFC
PLL
SERIAL LATCH
LPF
CCD-TR3000E model
3.58MHz (CCD-TR3000)
4.43MHz (CCD-TR3000E)
IC652 (54)
IC652 ⑭
IC733
ZOOM/FOCUS PRE DRIVE
IC733 (17) (19)
IC733 ⑪
IC731
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
D3.5V
MT5V

3-3. CAMERA BLOCK DIAGRAM (2)


VC-162 BOARD
(SEE PAGE 4-24)
CCD-TR3000 : NTSC model
CCD-TR3000E: PAL model
IC352
ZOOM PROCESS
IC353
NR
IC354
NR
IC355
MEMORY CONTROL
IC356
MEMORY
Y10-Y17 (IC655)
C10-C13 (IC655)
YIN0
YIN7
CIN0
CIN3
YOUT0
YOUT7
COUT0
COUT3
CHD
NME
CS ZVIS
SD CK
SDI
NRY BY
DICK
FLD2
VDD
D3.5V
IY0
IY7
IC0
IC3
OY0
OY7
OC0
OC3
XRST
FLD
VD
HD
DICK
NRR
XCS
XSCK
SI
ID1
ID2
ILSEQ
OD1
OD2
OCK
OLSEQ
ODV
OLALT
OFLD
D OUT1
D OUT2
L OUT
CLK2
DIN1
DIN2
CLK2
LSEQ
ARST
PSEQ
ED
CS
SCK
SIN
V RST
FLD2
CGV
MHD
NRYBY
IC353 (35) (44)
1.4μsec
3.6Vp-p
14μsec
IC353 (16) (17)
14.318MHz (CCD-TR3000)
14.1875MHz (CCD-TR3000E)
IC353 (15)
IC353 (13)
V
CCD-TR3000 model
CCD-TR3000E model
YI0
YI7
CI0
CI3
YO0
YO7
CO0
CO3
YW0
YW7
CW0
CW7
YR0
YR7
CR0
CR7
DICK
NRB
MHD
FLD2
CS
SCK
SI
RST
RST W
WAD
WE
SWCK/SRCK
RAD
WAE/RAE
RSTR
RE
YD IN0
YD IN7
CD IN0
CD IN7
YD OUT0
YD OUT7
CD OUT0
CD OUT7
RSTW
WAD
WE
SWCK
WAE
SRCK
RAE
RSTR
RE
Y40-Y47 (IC655)
C40-C43 (IC655)
CAMERA (1) (SEE PAGE 3-8)
(IC652 (61)) AHD
(IC602 (36)) V GAT
(IC652 (15)) REG H
(IC654 (12)) REG H
(IC758 (59)) CS ZVIS
(IC758 (60)) CS SM7
(IC758 (49)) EZ SCK
(IC758 (48)) EZ SO
(IC653 (33)) CS N/J
(IC653 (36)) CAM SCK
(IC653 (37)) CAM SO
SM7 RST
(IC652 (3)) FLD2
(IC652 (24)) CGV
(IC652 (24)) MHD
(IC655 (29)) DICK
(IC655 (19)) NRYBY
(IC653 (66)) V RST
8
4
09

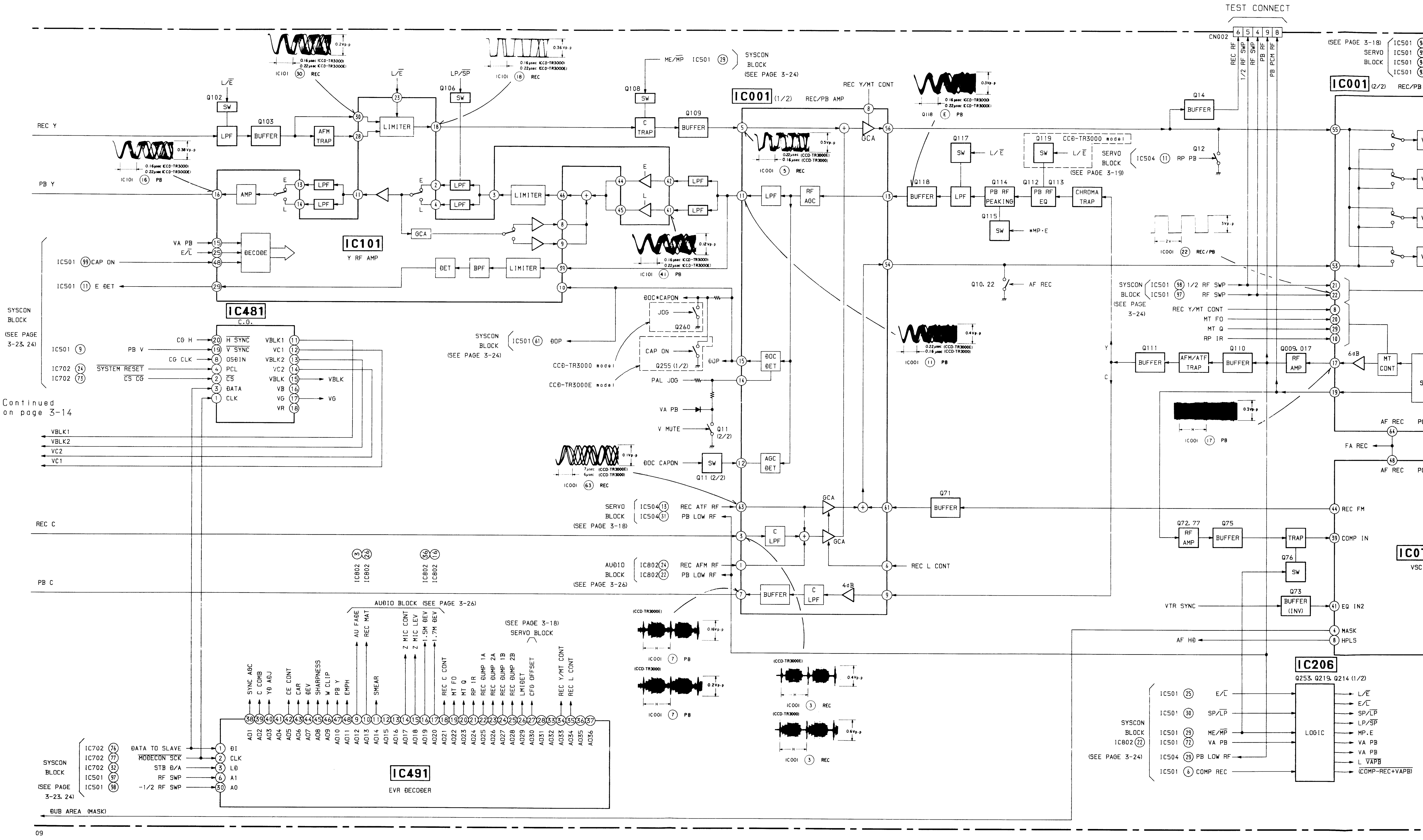
3-4. VIDEO BLOCK DIAGRAM (1)


JACK BLOCK
VIDEO
S VIDEO
(SEE PAGE 4-77)
EZ-16 BOARD
CN102
CN103
EASY CONNECTOR
VS-113 BOARD
(SEE PAGE 4-40, 44, 47, 52)
CAMERA BLOCK
VC-162 (SEE PAGE 3-8)
CN702
CN423
W104
IC422
SELECT SWITCH
IC704
CG CLK
IC421
INPUT/OUTPUT SWITCH
VIDEO I/O
S-Y I/O
S-C I/O
S IN
CLAMP
DDS
MUTE
VG
VBLK
CAM/LINE
PRINPA IN
IC501
IC702
SYSCON BLOCK
(SEE PAGE 3-23)
EZ IN/OUT
P. SAVE
D421
S JACK IN
COMP REC
V IN/OUT
(SEE PAGE 3-24)
EVF Y
EVF C
2dB
6dB
S-C OUT
EZ-C I/O
S-Y OUT
EZ-Y I/O
VIDEO OUT
EZ VIDEO I/O
Q420
Q410
BUFFER
Q421
Q422
Q423
Q425
D410
Q427
Q426
D213 (1/2)
D213 (2/2)
D423
D422
ACK SW
Q205 (1/2)
D413
D414
Q419
D204
D412
COMP-REC+VAPB
C OUT
PB C
Q201
Q203
TRAP SW
COMP REC
Q415
Q414
Y/C MIX
Q212
SW
EVF (CZ-2) (SEE PAGE 3-29)
CN422
SYSCON BLOCK (SEE PAGE 3-22, 23, 24)
IC702 (80) CAM DD ON
IC501 (6) COMP REC
IC501 (49) A OUT/IN
IC501 (48) V IN/OUT
VBLK2
VC2
VBLK1
VC1
DUB AREA
CCD-TR3000 model
CCD-TR3000E model
Q261
DOC*CAPON
SYNC AGC
PAL JOG HD
AF HD
REG H
JOG VD
IC501 (3)
VIDEO 4.7V
V MUTE
Q202
AGC
PB
REC
IC201
Y/C PROCESS
C COMB
COMB FILTER
VD/AD INS
Y MUTE
ACK SW
C MUTE
BURST/CHROMA DEEMPHASIS
BUS DECODER
SYNC SEP
HALF H KILLER
ACK ID
APC VCO
VXO
CARR CONV
SHARPNESS
X201
3.58MHz (CCD-TR3000 model)
4.43MHz (CCD-TR3000E model)
Q210
Q211
VTR SYNC
DOC*CAP ON
Q255 (1/2)
Q503
MODECON SCK
DATA TO SLAVE
CS VIDEO
RF SWP
V MUTE
ACC AMP
CHROMA/BURST EMPHASIS
REC CONVERT
REC C LPF
PB C BPF
PB CONVERT
ACC AMP
PB C LPF
Y DEEMP
CLIP COMP
HPF
IC205 (2/2)
AMP
PB Y
Q252
Q250
Q247
Q243, 244
Q246
Q248, Q251, Q256
E/L
L/E
SP/LP
L VAPB
Q226
FL203
COMB OUT LPF
Q227
Q228
Q229-230, Q240
3.58MHz (CCD-TR3000 model)
4.43MHz (CCD-TR3000E model)
TRAP
Q231
Q234
Q236
Q235
Q237
EQ
VAPB
*L·VAPB
IC204
CCD DELAY
Q224
FL202
Q225
LPF
Q223
Q259
FSC OFF
IC203
Q221
FL201
Q222
Q216
DELAY
RV201
Y/C SEP
IC202
REC C CONT
D.O. PULSE
DC FB
Q204
Q254
Q213
FSC
AU FSC
CE CONT
Q205
VA PB
IC421 (19) REC
IC421 (21) PB
IC421 (3) (7) PB
IC421 (15) (29) CAMERA
IC421 (17) (25) CAMERA
IC201 (30) REC
IC201 (14) REC
IC201 (10) PB
IC201 (14) PB
IC201 (32) PB
IC201 (24) REC/PB
IC201 (62) REC/PB
IC421 (11) PB
IC421 (13) PB
IC421 (19) PB


CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
IC201 (1/2) Y/C PROCESS
IC201 (2/2) Y PROCESS
IC205 (1/2)
IC205 (2/2)
IC204
IC203
IC202
IC381 PAL JOG CHROMA PROCESS
COMB FILTER
COMB OUT LPF
BUFFER
3.58MHz (CCD-TR3000 model) 4.43MHz (CCD-TR3000E model) TRAP
EQ
AMP
Y EMPH
W/D CLIP
NOISE CANSEL
MOD
LIMITER
DEMOD
LPF
HPF
TRAP
FL204 DEMOD LPF
CCD DELAY
Y DEEMP
CLIP COMP
AGC
V/AD INS
DDS
Y MUTE
CLAMP
MUTE
ACC AMP
CHROMA/BURST EMPHASIS
REC CONVERT
REC C LPF
PB C LPF
ACC AMP
PB CONVERT
PB C BPF
BURST/CHROMA DEEMPHASIS
ACK SW
C MUTE
BUS DECODER
SYNC SEP
HALF H KILLER
ACK ID
APC VCO
VXO
CARR CONV
X201 3.58MHz (CCD-TR3000 model) 4.43MHz (CCD-TR3000E model)
SHARPNESS
CE CONT
AU FSC IC802 (29) AUDIO BLOCK (SEE PAGE 3-26)
VA PB IC501 (72) SYSCON BLOCK (SEE PAGE 3-24)
D.O. PULSE
DC FB
DOC*CAP ON
FSC
VTR SYNC
MODECON SCK
DATA TO SLAVE
CS VIDEO
RF SWP
V MUTE
SYSCON BLOCK (SEE PAGE 3-22, 24)
EDIT IC501 (31) SYSCON BLOCK (SEE PAGE 3-24)
VIDEO 4.7V
VIDEO 4.9V
COMP-REC+VAPB
REC Y
PB Y
REC C
PB C
VBLK1
VBLK2
VC2
VC1
PAL JOG HD
PAL JOG SWITCH
JOG SWITCH
ON/OFF SWITCH
LEVEL SHIFT
*JOG Q507 (1/2) SYSCON BLOCK
IC501 (4) IC501 (25) SYSCON BLOCK
DUB AREA (MASK)
CCD-TR3000E model
CCD-TR3000 model
CAMERA
CG CLK
SYNC AGC
PAL JOG HD
AF HD
REG H
JOG VD
SYSCON BLOCK IC501 (3) (SEE PAGE 3-24)
IC501 (26) SYSCON BLOCK IC702 (40) (SEE PAGE 3-23)
FSC OFF IC501 (27) SYSCON BLOCK (SEE PAGE 3-24)
Y/C SEP
RV201
REC C CONT
C OUT
PB C
COMP REC
ACK SW

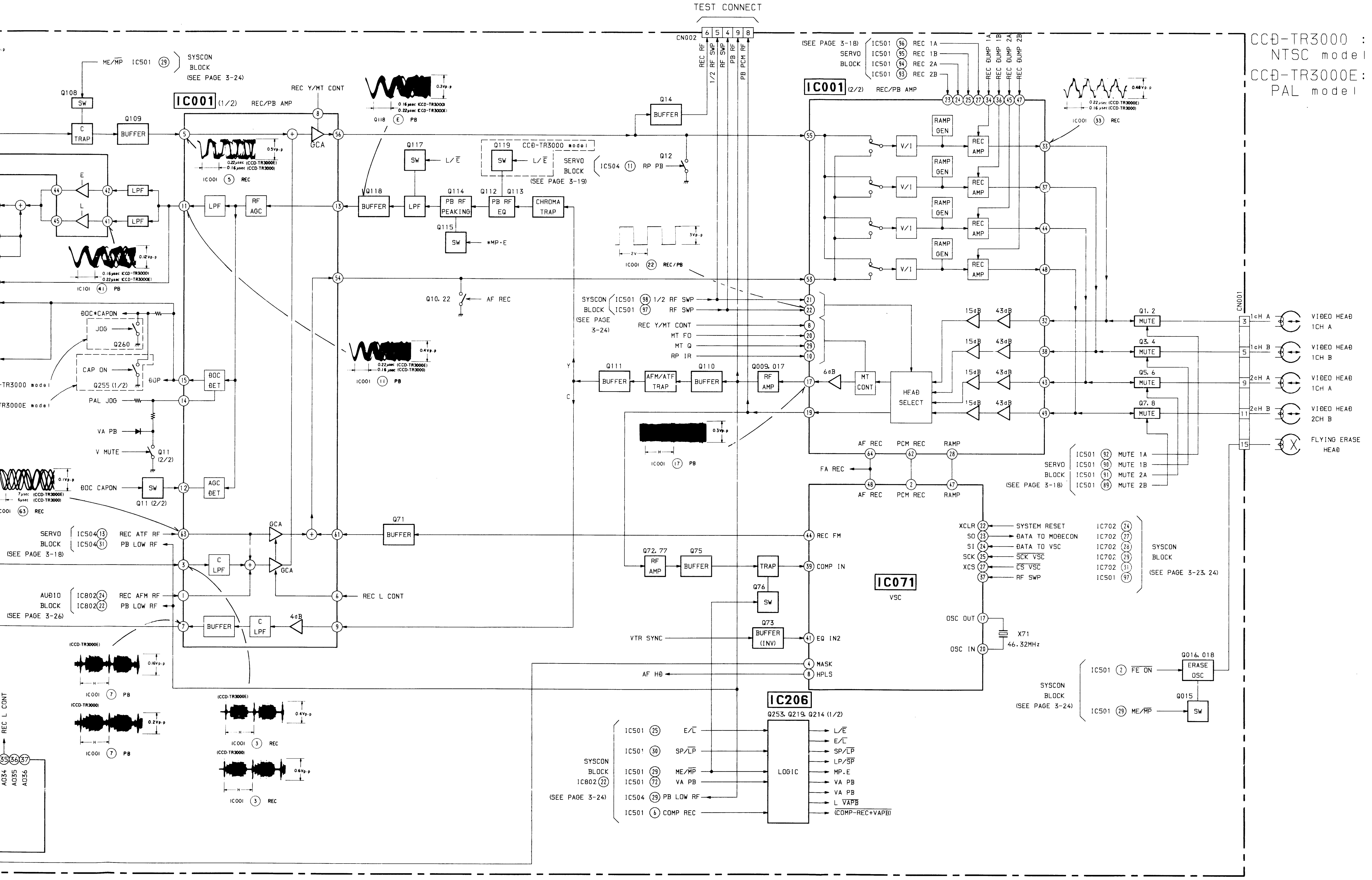
Continued on page 3-15

3-5. VIDEO BLOCK DIAGRAM (2)

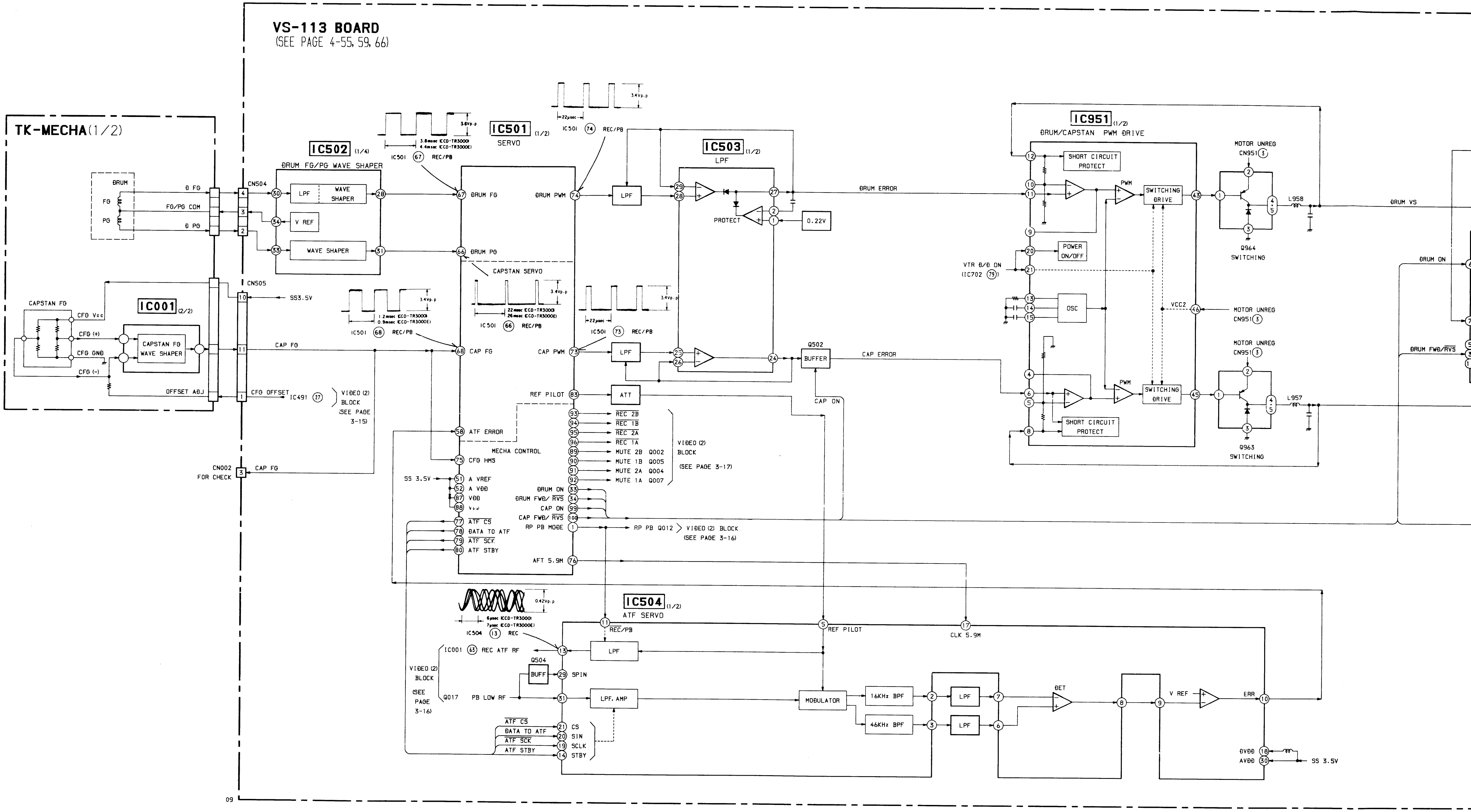


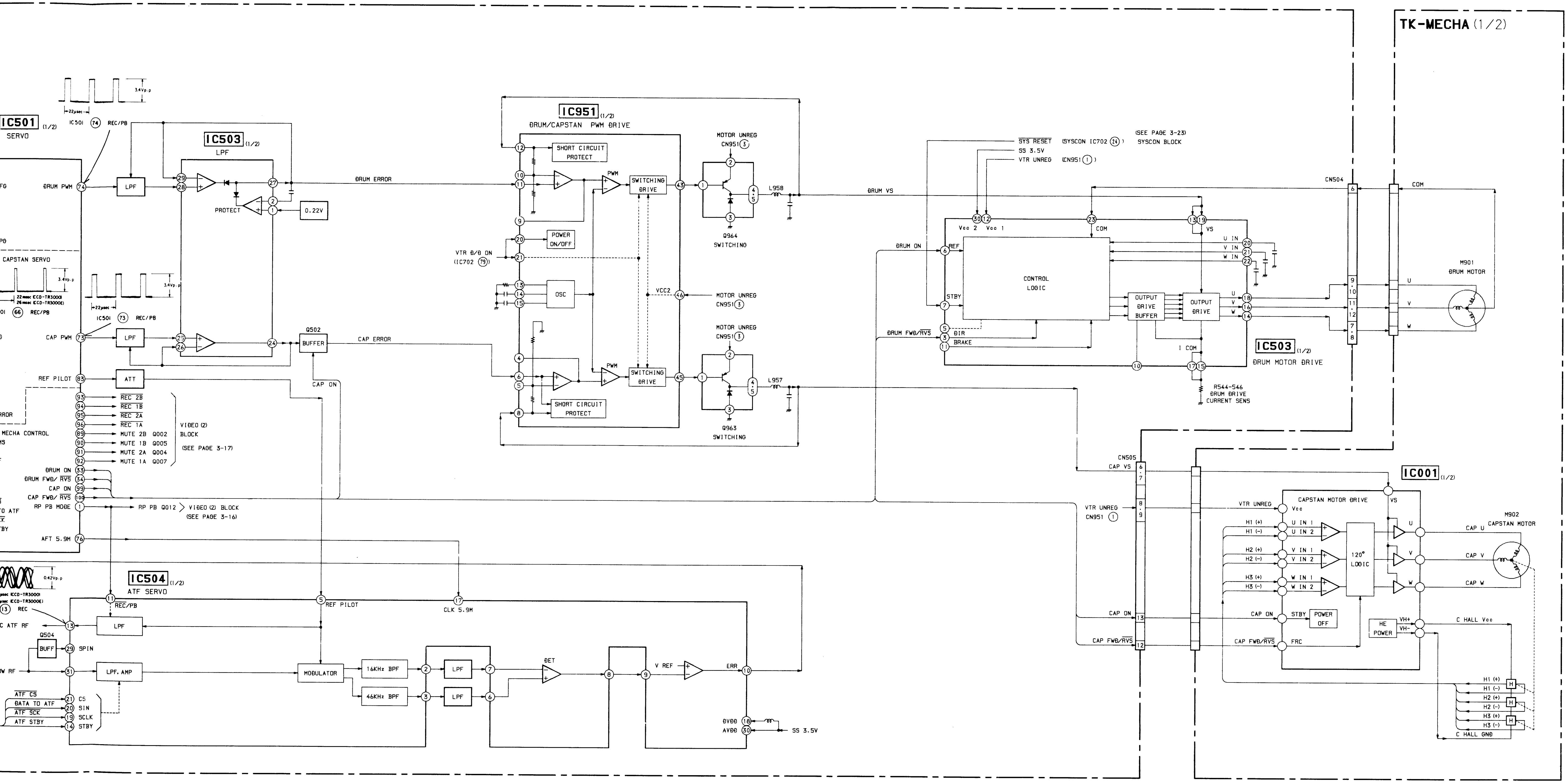
TEST CONNECT
CN002
REC RF
1/2 RF SWP
RF SWP
PB RF
PB PCM RF
REC Y
PB Y
REC C
PB C
Q102
SW
LPF
Q103
BUFFER
AFM TRAP
LIMITER
L/E
LP/SP
Q106
Q108
ME/MP IC501 (29) SYSCON BLOCK (SEE PAGE 3-24)
C TRAP
Q109
IC001 (1/2) REC/PB AMP
REC Y/MT CONT
GCA
AMP
DECODE
IC101
Y RF AMP
DET
BPF
VA PB
E/L
IC501 (99) CAP ON
IC501 (11) E DET
SYSCON BLOCK (SEE PAGE 3-23, 24)
IC481
C.G.
CG H
PB V
CG CLK
SYSTEM RESET
CS CG
H SYNC
V SYNC
OSDIN
PCL
CS
DATA
CLK
VBLK1
VC1
VBLK2
VC2
VBLK
VB
VG
VR
IC501 (9)
IC702 (24)
IC702 (73)
VBLK1
VBLK2
VC2
VC1
SYSCON BLOCK (SEE PAGE 3-24) IC501 (61) DDP
DDC*CAPON
JOG
Q260
CAP ON
Q255 (1/2)
CCD-TR3000 model
CCD-TR3000E model
PAL JOG
VA PB
V MUTE
Q11 (2/2)
DDC CAPON
DDC DET
AGC DET
RF AGC
SERVO BLOCK (SEE PAGE 3-18) IC504 (13) REC ATF RF
IC504 (31) PB LOW RF
AUDIO BLOCK (SEE PAGE 3-26) IC802 (24) REC AFM RF
IC802 (22) PB LOW RF
C LPF
4dB
REC L CONT
Q71
Q117
Q118
Q114 PB RF PEAKING
Q112 Q113 PB RF EQ
CHROMA TRAP
Q115
*MP·E
Q119 CCD-TR3000 model
SERVO BLOCK (SEE PAGE 3-19)
IC504 (11) RP PB
Q12
Q14
Q10, 22 AF REC
SYSCON BLOCK (SEE PAGE 3-24) IC501 (98) 1/2 RF SWP
IC501 (97) RF SWP
REC Y/MT CONT
MT FO
MT Q
RP IR
Q111
AFM/ATF TRAP
Q110
Q009, 017 RF AMP
6dB
MT CONT
AF REC
FA REC
REC FM
Q72, 77 RF AMP
Q75
TRAP
COMP IN
Q76
Q73 BUFFER (INV)
VTR SYNC
EQ IN2
AF HD
MASK
HPLS
IC206
Q253, Q219, Q214 (1/2)
LOGIC
IC501 (25) E/L
IC501 (30) SP/LP
IC501 (29) ME/MP
IC501 (72) VA PB
IC802 (22)
IC504 (29) PB LOW RF
IC501 (6) COMP REC
L/E
E/L
SP/LP
LP/SP
MP.E
VA PB
L VAPB
(COMP-REC+VAPB)
IC001 (2/2) REC/PB
SEE PAGE 3-18 SERVO BLOCK IC501
ICO
VSC
AUDIO BLOCK (SEE PAGE 3-26)
AU FADE
REC MAT
Z MIC CONT
Z MIC LEV
1.5M DEV
1.7M DEV
(SEE PAGE 3-18) SERVO BLOCK
SYNC AGC
C COMB
YD ADJ
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
SMEAR
REC C CONT
MT FO
MT Q
RP IR
REC DUMP 1A
REC DUMP 2A
REC DUMP 1B
REC DUMP 2B
LMIDET
CFG OFFSET
REC Y/MT CONT
REC L CONT
IC802 (3)
IC802 (26)
IC802 (36)
IC802 (16)
IC491
EVR DECODER
DATA TO SLAVE
MODECON SCK
STB D/A
RF SWP
-1/2 RF SWP
DI
CLK
LD
A1
A0
IC702 (76)
IC702 (77)
IC702 (32)
IC501 (97)
IC501 (98)
SYSCON BLOCK (SEE PAGE 3-23, 24)
SUB AREA (MASK)
IC101 (30) REC
IC101 (18) REC
IC101 (16) PB
IC101 (41) PB
IC001 (5) REC
IC001 (11) PB
IC001 (17) PB
IC001 (22) REC/PB
IC001 (63) REC
IC001 (7) PB
IC001 (3) REC
Q118 (E) PB
0.16μsec (CCD-TR3000)
0.22μsec (CCD-TR3000E)
0.2Vp-p
0.36Vp-p
0.38Vp-p
0.5Vp-p
0.3Vp-p
0.12Vp-p
0.4Vp-p
0.1Vp-p
0.16Vp-p
0.2Vp-p
0.6Vp-p
3Vp-p
2V
7μsec (CCD-TR3000E)
6μsec (CCD-TR3000)
09

Continued on page 3-14

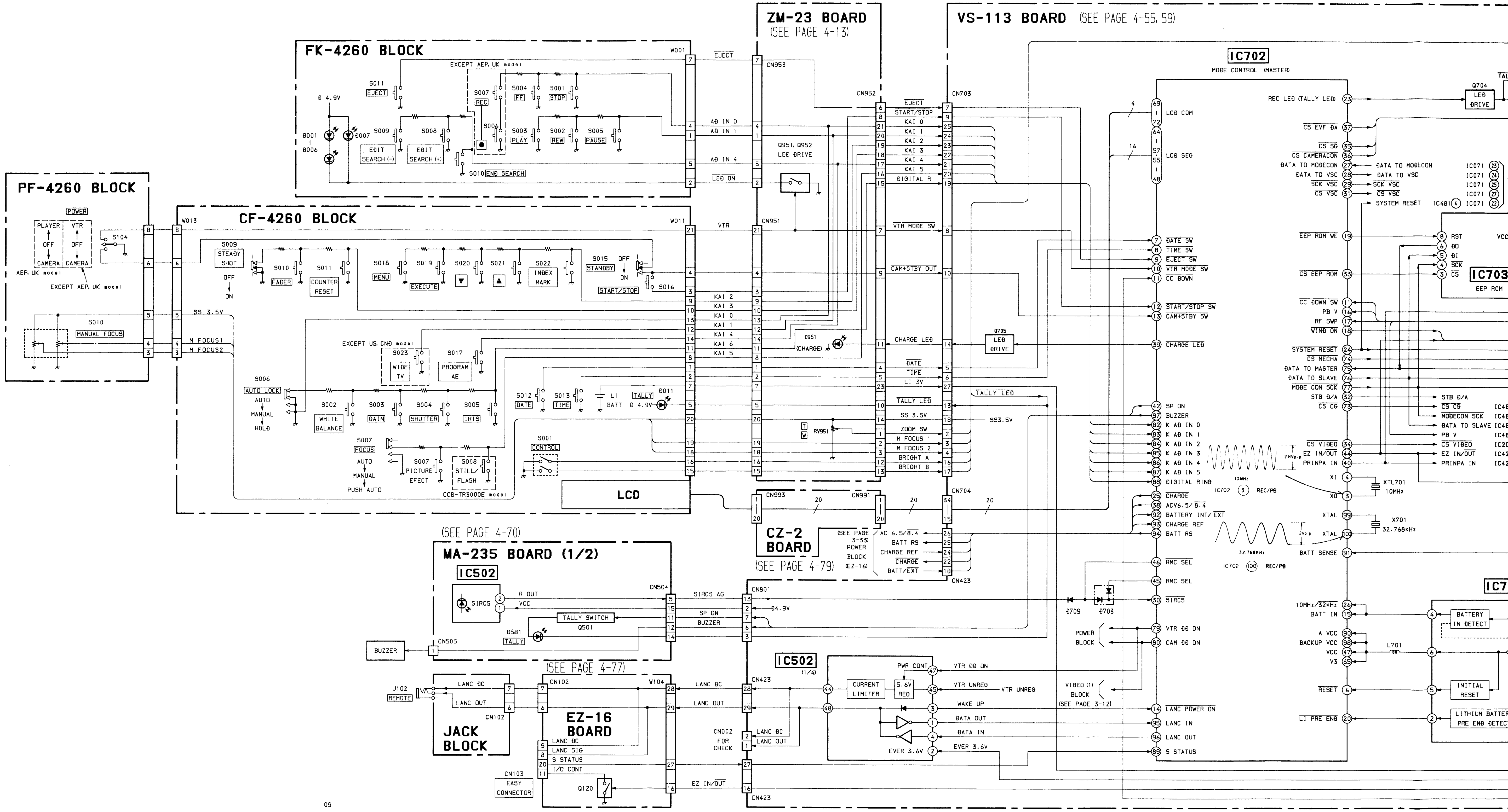

CCD-TR3000 : NTSC model
CCD-TR3000E : PAL model
TEST CONNECT
CN002
REC RF
1/2 RF SWP
RF SWP
PB RF
PB PCM RF
ME/MP IC501 (29) SYSCON BLOCK (SEE PAGE 3-24)
Q108 SW
C TRAP
Q109 BUFFER
IC001 (1/2) REC/PB AMP
REC Y/MT CONT
GCA
0.5Vp-p
0.22μsec (CCD-TR3000E)
0.16μsec (CCD-TR3000)
IC001 (5) REC
0.3Vp-p
0.16μsec (CCD-TR3000)
0.22μsec (CCD-TR3000E)
Q118 (E) PB
Q14 BUFFER
Q117 SW L/E
Q119 CCD-TR3000 model SW L/E
SERVO BLOCK (SEE PAGE 3-19)
IC504 (11) RP PB
Q12
Q118 BUFFER
LPF
Q114 PB RF PEAKING
Q112 Q113 PB RF EQ
CHROMA TRAP
Q115 SW *MP·E
RF AGC
LPF
E
L
0.12Vp-p
0.16μsec (CCD-TR3000)
0.22μsec (CCD-TR3000E)
IC101 (41) PB
3Vp-p
2V
IC001 (22) REC/PB
Q10, 22 AF REC
DOC*CAPON
JOG
Q260
CAP ON
Q255 (1/2)
DOP
-TR3000 model
R3000E model
PAL JOG
VA PB
V MUTE
Q11 (2/2)
DOC DET
0.4Vp-p
0.22μsec (CCD-TR3000E)
0.16μsec (CCD-TR3000)
IC001 (11) PB
SYSCON BLOCK IC501 (98) 1/2 RF SWP
IC501 (97) RF SWP
(SEE PAGE 3-24)
REC Y/MT CONT
MT FO
MT Q
RP IR
Y
C
Q111 BUFFER
AFM/ATF TRAP
Q110 BUFFER
Q009, 017 RF AMP
6dB
MT CONT
HEAD SELECT
0.3Vp-p
IC001 (17) PB
0.1Vp-p
7μsec (CCD-TR3000E)
6μsec (CCD-TR3000)
IC001 (63) REC
DOC CAPON
SW
Q11 (2/2)
AGC DET
SERVO BLOCK IC504 (13) REC ATF RF
IC504 (31) PB LOW RF
(SEE PAGE 3-18)
C LPF
GCA
Q71 BUFFER
AUDIO BLOCK IC802 (24) REC AFM RF
IC802 (22) PB LOW RF
(SEE PAGE 3-26)
REC L CONT
BUFFER
C LPF
4dB
(CCD-TR3000E)
0.16Vp-p
IC001 (7) PB
(CCD-TR3000)
0.2Vp-p
IC001 (7) PB
(CCD-TR3000E)
0.4Vp-p
IC001 (3) REC
(CCD-TR3000)
0.6Vp-p
IC001 (3) REC
REC L CONT
A034 A035 A036
(SEE PAGE 3-18) SERVO BLOCK IC501 (96) REC 1A
IC501 (95) REC 1B
IC501 (94) REC 2A
IC501 (93) REC 2B
REC DUMP 1A
REC DUMP 1B
REC DUMP 2A
REC DUMP 2B
IC001 (2/2) REC/PB AMP
0.48Vp-p
0.22μsec (CCD-TR3000E)
0.16μsec (CCD-TR3000)
IC001 (33) REC
RAMP GEN
V/I
REC AMP
15dB
43dB
Q1, 2 MUTE
Q3, 4 MUTE
Q5, 6 MUTE
Q7, 8 MUTE
CN001
1cH A VIDEO HEAD 1CH A
1cH B VIDEO HEAD 1CH B
2cH A VIDEO HEAD 1CH A
2cH B VIDEO HEAD 2CH B
FLYING ERASE HEAD
AF REC
PCM REC
RAMP
IC501 (92) MUTE 1A
IC501 (90) MUTE 1B
IC501 (91) MUTE 2A
IC501 (89) MUTE 2B
SERVO BLOCK (SEE PAGE 3-18)
FA REC
AF REC
PCM REC
RAMP
XCLR SYSTEM RESET IC702 (24)
SO DATA TO MDBECON IC702 (27)
SI DATA TO VSC IC702 (26)
SCK SCK VSC IC702 (29)
XCS CS VSC IC702 (31)
RF SWP IC501 (97)
SYSCON BLOCK (SEE PAGE 3-23, 24)
REC FM
COMP IN
Q72, 77 RF AMP
Q75 BUFFER
TRAP
Q76 SW
Q73 BUFFER (INV)
IC071 VSC
VTR SYNC
EQ IN2
OSC OUT
OSC IN
X71 46.32MHz
MASK
AF HD
HPLS
IC206 Q253, Q219, Q214 (1/2)
SYSCON BLOCK IC802 (22) (SEE PAGE 3-24)
IC501 (25) E/L
IC501 (30) SP/LP
IC501 (29) ME/MP
IC501 (72) VA PB
IC504 (29) PB LOW RF
IC501 (6) COMP REC
LOGIC
L/E
E/L
SP/LP
LP/SP
MP.E
VA PB
VA PB
L VAPB
(COMP-REC+VAPB)
IC501 (2) FE ON
Q016, 018 ERASE OSC
SYSCON BLOCK (SEE PAGE 3-24)
Q015
IC501 (29) ME/MP SW

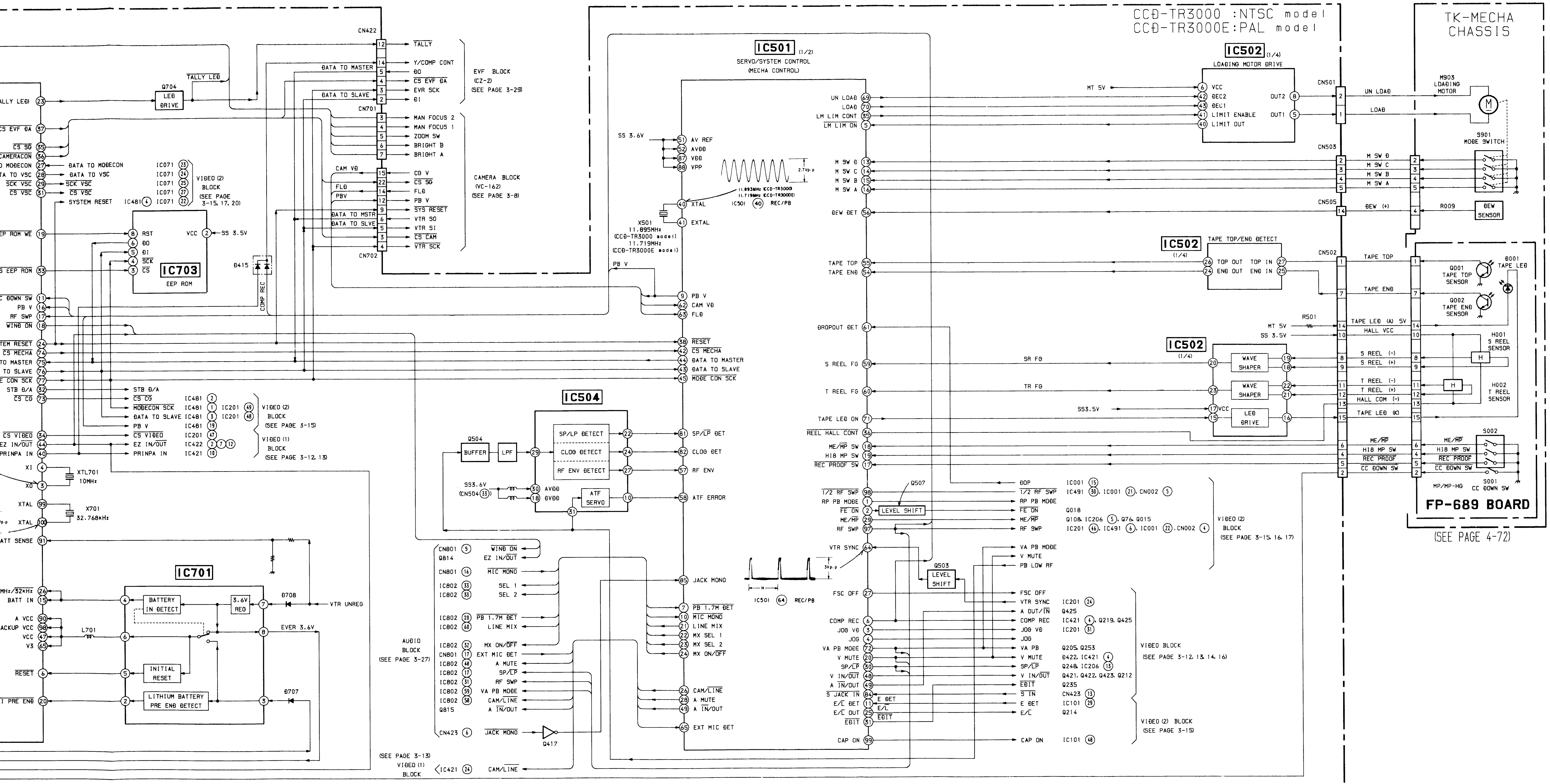
3-6. SERVO BLOCK DIAGRAM


VS-113 BOARD
(SEE PAGE 4-55, 59, 66)
TK-MECHA (1/2)
DRUM
FG
PG
D FG
FG/PG COM
D PG
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
OFFSET ADJ
IC001 (2/2)
CAPSTAN FG WAVE SHAPER
CN504
CN505
CN002 FOR CHECK
SS3.5V
CAP FG
CFG OFFSET
IC491 (37)
VIDEO (2) BLOCK (SEE PAGE 3-15)
IC502 (1/4)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
V REF
IC501 (1/2)
SERVO
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
REF PILOT
ATF ERROR
MECHA CONTROL
CFG HMS
A VREF
A VDD
VDD
ATF CS
DATA TO ATF
ATF SCK
ATF STBY
AFT 5.9M
DRUM ON
DRUM FWD/RVS
CAP ON
CAP FWD/RVS
RP PB MODE
RP PB Q012
VIDEO (2) BLOCK (SEE PAGE 3-16)
REC 2B
REC 1B
REC 2A
REC 1A
MUTE 2B Q002
MUTE 1B Q005
MUTE 2A Q004
MUTE 1A Q007
VIDEO (2) BLOCK (SEE PAGE 3-17)
ATT
IC501 (67) REC/PB
3.8msec (CCD-TR3000)
4.4msec (CCD-TR3000E)
3.6Vp-p
IC501 (74) REC/PB
22μsec
3.4Vp-p
IC501 (68) REC/PB
1.2msec (CCD-TR3000)
0.9msec (CCD-TR3000E)
IC501 (66) REC/PB
22msec (CCD-TR3000)
26msec (CCD-TR3000E)
IC501 (73) REC/PB
IC503 (1/2)
LPF
PROTECT
0.22V
DRUM ERROR
CAP ERROR
Q502
BUFFER
CAP ON
IC951 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
VTR D/D ON (IC702 (79))
OSC
VCC2
MOTOR UNREG CN951 (3)
Q964 SWITCHING
Q963 SWITCHING
L958
L957
DRUM VS
DRUM ON
DRUM FWD/RVS
IC504 (1/2)
ATF SERVO
REC/PB
REF PILOT
CLK 5.9M
0.42Vp-p
6μsec (CCD-TR3000)
7μsec (CCD-TR3000E)
IC504 (13) REC
IC001 (63) REC ATF RF
VIDEO (2) BLOCK (SEE PAGE 3-16)
Q504
BUFF
SPIN
Q017 PB LOW RF
LPF. AMP
MODULATOR
16KHz BPF
46KHz BPF
DET
V REF
ERR
CS
SIN
SCLK
STBY
DVDD
AVDD
SS 3.5V
09

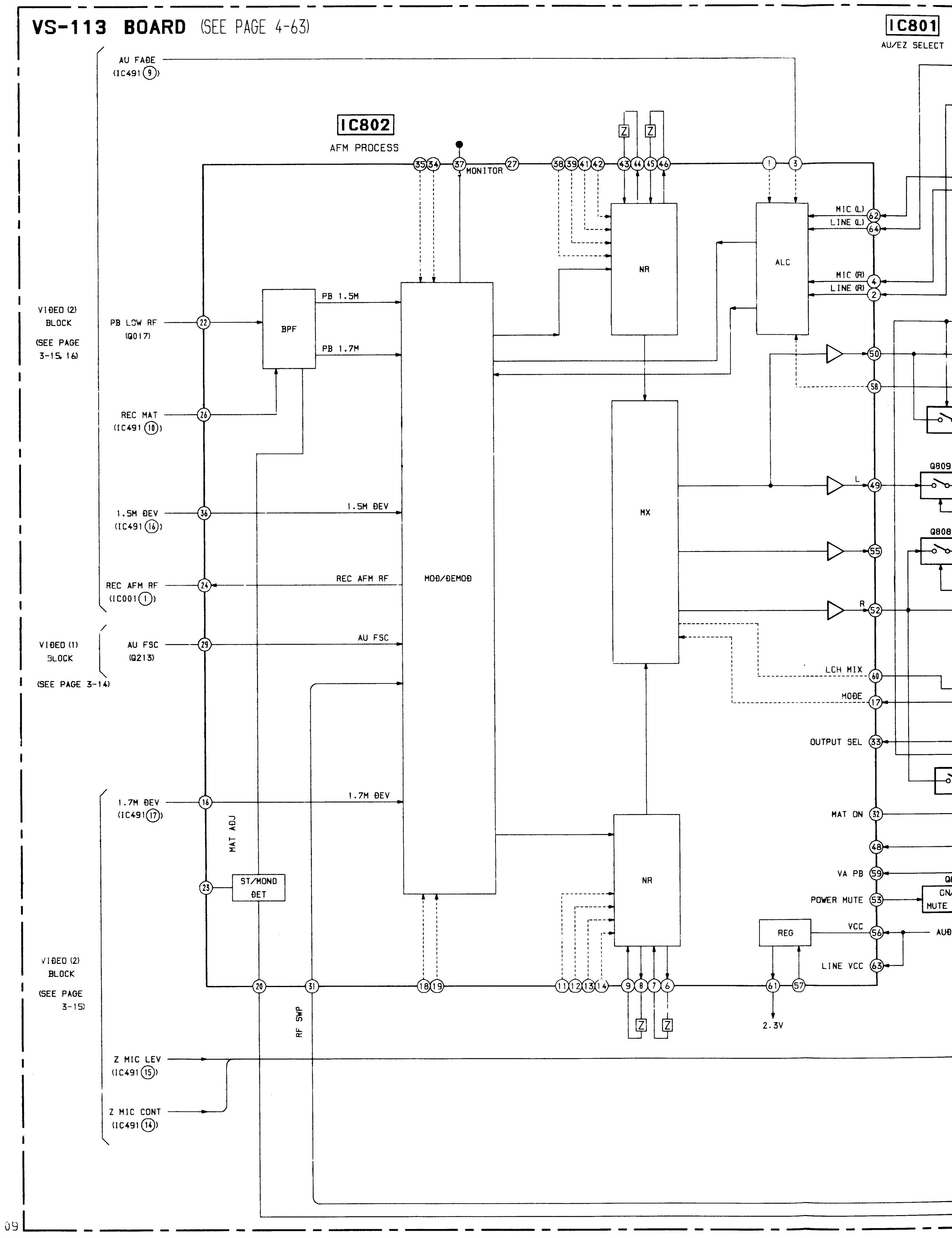

TK-MECHA (1/2)
IC501 (1/2)
SERVO
IC501 74 REC/PB
22µsec
3.4Vp-p
DRUM PWM 74
LPF
IC503 (1/2)
LPF
PROTECT
0.22V
DRUM ERROR
CAPSTAN SERVO
22 msec (CCD-TR300)
26 msec (CCD-TR3000E)
66 REC/PB
IC501 73 REC/PB
CAP PWM 73
LPF
Q502
BUFFER
CAP ERROR
CAP ON
REF PILOT 83
ATT
REC 2B
REC 1B
REC 2A
REC 1A
MUTE 2B Q002
MUTE 1B Q005
MUTE 2A Q004
MUTE 1A Q007
VIDEO (2) BLOCK
(SEE PAGE 3-17)
MECHA CONTROL
DRUM ON 33
DRUM FWD/RVS 34
CAP ON 99
CAP FWD/RVS 100
RP PB MODE 1
RP PB Q012
VIDEO (2) BLOCK
(SEE PAGE 3-16)
AFT 5.9M 76
IC951 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
VTR D/D ON
(IC702 79)
OSC
VCC2
MOTOR UNREG CN951 3
Q964 SWITCHING
Q963 SWITCHING
L958
L957
DRUM VS
SYS RESET (SYSCON IC702 24)
SS 3.5V
VTR UNREG (CN951 1)
(SEE PAGE 3-23) SYSCON BLOCK
Vcc 2
Vcc 1
COM
VS
U IN
V IN
W IN
DRUM ON
REF
STBY
CONTROL LOGIC
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM FWD/RVS
DIR
BRAKE
I COM
IC503 (1/2)
DRUM MOTOR DRIVE
R544-546 DRUM DRIVE CURRENT SENS
CN504
COM
M901 DRUM MOTOR
U
V
W
CN505
CAP VS
VTR UNREG CN951 1
CAP ON
CAP FWD/RVS
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
VS
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
FRC
HE POWER
VH+
VH-
M902 CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND
0.42Vp-p
IC504 (1/2)
ATF SERVO
11 REC/PB
13 REC
ATF RF
Q504
BUFF
29 SPIN
31
LPF. AMP
ATF CS
DATA TO ATF
ATF SCK
ATF STBY
CS
SIN
SCLK
STBY
REF PILOT
CLK 5.9M
MODULATOR
16KHz BPF
46KHz BPF
LPF
DET
V REF
ERR
DVDD
AVDD
SS 3.5V

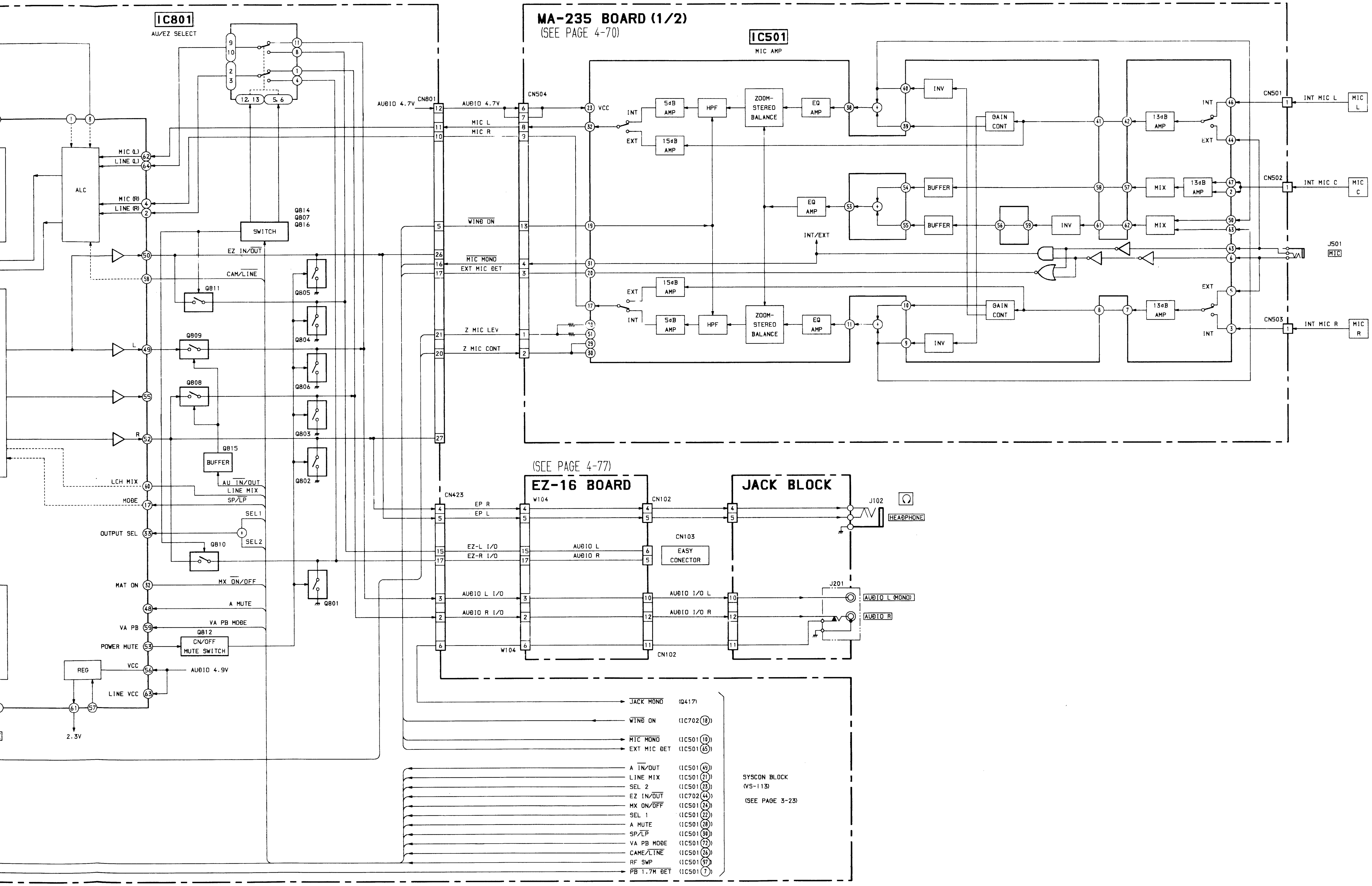
3-7. SYSTEM CONTROL BLOCK DIAGRAM


FK-4260 BLOCK
PF-4260 BLOCK
CF-4260 BLOCK
ZM-23 BOARD
(SEE PAGE 4-13)
VS-113 BOARD (SEE PAGE 4-55, 59)
MA-235 BOARD (1/2)
(SEE PAGE 4-70)
EZ-16 BOARD
(SEE PAGE 4-77)
JACK BLOCK
CZ-2 BOARD
(SEE PAGE 4-79)
IC702
MODE CONTROL (MASTER)
IC703
EEP ROM
IC502
IC502 (1/4)
LCD
S011 EJECT
S007 REC
S004 FF
S001 STOP
S009
S008
EDIT SEARCH (-)
EDIT SEARCH (+)
S003 PLAY
S002 REW
S005 PAUSE
S010 END SEARCH
EXCEPT AEP, UK model
D001 ~ D006
D007
POWER
PLAYER
VTR
OFF
CAMERA
S104
AEP, UK model
EXCEPT AEP, UK model
S010 MANUAL FOCUS
S009 STEADY SHOT
S010 FADER
S011 COUNTER RESET
S018 MENU
S019 EXECUTE
S020
S021
S022 INDEX MARK
S015 STANDBY
START/STOP
S016
EXCEPT US, CND model
S023 WIDE TV
S017 PROGRAM AE
S006 AUTO LOCK
AUTO
MANUAL
HOLD
S002 WHITE BALANCE
S003 GAIN
S004 SHUTTER
S005 IRIS
S007 FOCUS
PUSH AUTO
S007 PICTURE EFECT
S008 STILL/FLASH
CCD-TR3000E model
S001 CONTROL
S012 DATE
S013 TIME
LI BATT
TALLY
D011
W001
W011
W013
EJECT
AD IN 0
AD IN 1
AD IN 4
LED ON
VTR
KAI 0
KAI 1
KAI 2
KAI 3
KAI 4
KAI 5
KAI 6
SS 3.5V
M FOCUS1
M FOCUS2
CN953
CN952
CN951
CN703
CN704
CN993
CN991
CN423
CN801
CN504
CN505
CN102
CN103
EASY CONNECTOR
CN002 FOR CHECK
W104
Q951, Q952 LED DRIVE
D951 (CHARGE)
RV951
START/STOP
DIGITAL R
VTR MODE SW
CAM+STBY OUT
CHARGE LED
DATE
TIME
LI 3V
TALLY LED
SS 3.5V
ZOOM SW
M FOCUS 1
M FOCUS 2
BRIGHT A
BRIGHT B
Q705 LED DRIVE
SS3.5V
AC 6.5/B.4
BATT RS
CHARGE REF
CHARGE
BATT/EXT
POWER BLOCK (EZ-16)
SIRCS
R OUT
VCC
TALLY SWITCH
Q501
D581 TALLY
SIRCS AG
SP ON
BUZZER
D4.9V
LANC DC
LANC OUT
LANC SIG
S STATUS
I/O CONT
Q120
EZ IN/OUT
J102 REMOTE
CURRENT LIMITER
5.6V REG
PWR CONT
VTR DD ON
VTR UNREG
WAKE UP
DATA OUT
DATA IN
EVER 3.6V
VIDEO (1) BLOCK (SEE PAGE 3-12)
POWER BLOCK
D709
D703
LCD COM
LCD SEG
DATE SW
TIME SW
EJECT SW
CC DOWN
START/STOP SW
CAM+STBY SW
SP ON
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
K AD IN 5
DIGITAL RING
ACV6.5/B.4
BATTERY INT/EXT
CHARGE REF
BATT RS
RMC SEL
SIRCS
VTR DD ON
CAM DD ON
LANC POWER ON
LANC IN
LANC OUT
S STATUS
REC LED (TALLY LED)
Q704 LED DRIVE
CS EVF DA
CS SG
CS CAMERACON
DATA TO MODECON
DATA TO VSC
SCK VSC
CS VSC
SYSTEM RESET
IC071
IC481
EEP ROM WE
CS EEP ROM
RST
DO
DI
SCK
CS
CC DOWN SW
PB V
RF SWP
WIND ON
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
STB D/A
CS CG
MODECON SCK
CS VIDEO
EZ IN/OUT
PRINPA IN
XI
XO
XTL701 10MHz
XTAL
X701 32.768kHz
IC702 (3) REC/PB
IC702 (100) REC/PB
2.8Vp-p
2Vp-p
BATT SENSE
10MHz/32kHz
BATT IN
A VCC
BACKUP VCC
VCC
V3
L701
BATTERY IN DETECT
RESET
INITIAL RESET
LI PRE END
LITHIUM BATTERY PRE END DETECT
09

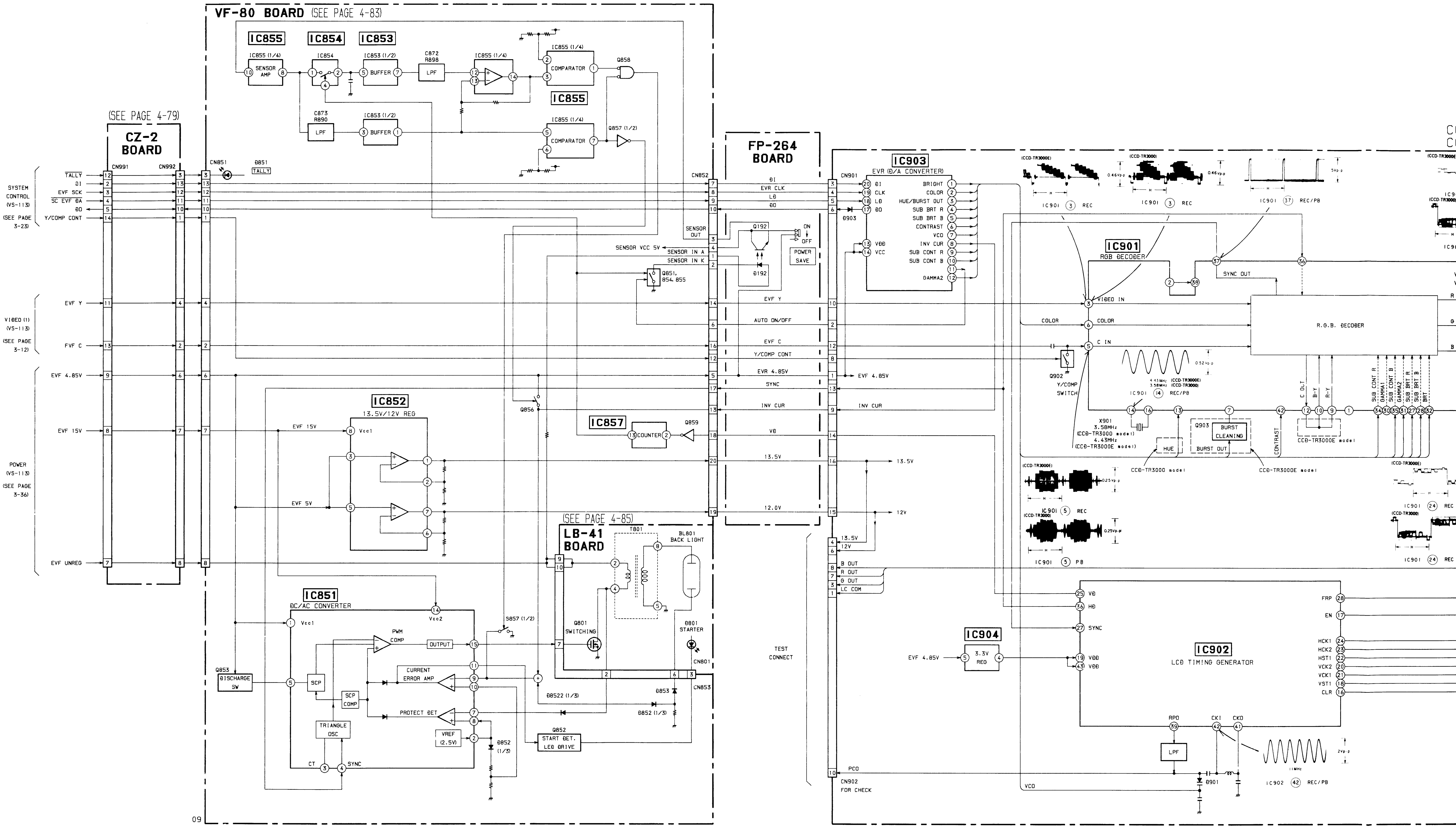

CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
TK-MECHA CHASSIS
IC501 (1/2) SERVO/SYSTEM CONTROL (MECHA CONTROL)
IC502 (1/4) LOADING MOTOR DRIVE
IC502 (1/4) TAPE TOP/END DETECT
IC502 (1/4)
IC504
IC701
IC703 EEP ROM
CN422
CN701
CN702
EVF BLOCK (CZ-2) (SEE PAGE 3-29)
CAMERA BLOCK (VC-162) (SEE PAGE 3-8)
VIDEO (2) BLOCK (SEE PAGE 3-15, 17, 20)
VIDEO (2) BLOCK (SEE PAGE 3-15)
VIDEO (1) BLOCK (SEE PAGE 3-12, 13)
AUDIO BLOCK (SEE PAGE 3-27)
VIDEO BLOCK (SEE PAGE 3-12, 13, 14, 16)
VIDEO (2) BLOCK (SEE PAGE 3-15)
VIDEO (2) BLOCK (SEE PAGE 3-15, 16, 17)
(SEE PAGE 3-13) VIDEO (1) BLOCK
Q704 LED DRIVE
TALLY LED
X501 11.895MHz (CCD-TR3000 model) 11.719MHz (CCD-TR3000E model)
XTL701 10MHz
X701 32.768kHz
BATTERY IN DETECT
3.6V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D708
D707
VTR UNREG
EVER 3.6V
L701
D415
COMP REC
SP/LP DETECT
CLOG DETECT
RF ENV DETECT
ATF SERVO
Q504 BUFFER
LPF
SS3.6V (CN504 (33))
Q507 LEVEL SHIFT
Q503 LEVEL SHIFT
Q417
WAVE SHAPER
LED DRIVE
M903 LOADING MOTOR
S901 MODE SWITCH
DEW SENSOR
R009
R501
CN501
CN503
CN505
CN502
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
H001 S REEL SENSOR
H002 T REEL SENSOR
S002
S001 CC DOWN SW
MP/MP-HG
FP-689 BOARD
(SEE PAGE 4-72)
IC501 (40) REC/PB
IC501 (64) REC/PB
2.7Vp-p
3Vp-p
UN LOAD
LOAD
LM LIM CONT
LM LIM ON
M SW D
M SW C
M SW B
M SW A
DEW DET
TAPE TOP
TAPE END
DROPOUT DET
S REEL FG
T REEL FG
TAPE LED ON
REEL HALL CONT
ME/MP SW
HI8 MP SW
REC PROOF SW
1/2 RF SWP
RP PB MODE
FE ON
ME/MP
RF SWP
VTR SYNC
FSC OFF
COMP REC
JOG VD
JOG
VA PB MODE
V MUTE
SP/LP
V IN/OUT
A IN/OUT
S JACK IN
E/C DET
E/C OUT
EDIT
CAP ON
AV REF
AVDD
VDD
VPP
XTAL
EXTAL
PB V
CAM VD
FLD
RESET
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
SP/LP DET
CLOG DET
RF ENV
ATF ERROR
JACK MONO
PB 1.7M DET
MIC MONO
LINE MIX
MX SEL 1
MX SEL 2
MX ON/OFF
CAM/LINE
A MUTE
A IN/OUT
EXT MIC DET
TALLY
Y/COMP CONT
DD
CS EVF DA
EVR SCK
DI
MAN FOCUS 2
MAN FOCUS 1
ZOOM SW
BRIGHT B
BRIGHT A
CG V
CS SG
PB V
SYS RESET
VTR SO
VTR SI
CS CAM
VTR SCK
RST
VCC
CS
SS 3.5V
SS 3.6V
MT 5V
SS3.5V
STB D/A
MODECON SCK
EZ IN/OUT
PRINPA IN
ATT SENSE
BATT IN
BACKUP VCC
SYSTEM RESET
WIND ON
SEL 1
SEL 2
EXT MIC DET
VA PB MODE
DOP
PB LOW RF
CC DOWN SW
HALL VCC
HALL COM
TAPE LED (A) 5V
TAPE LED (K)

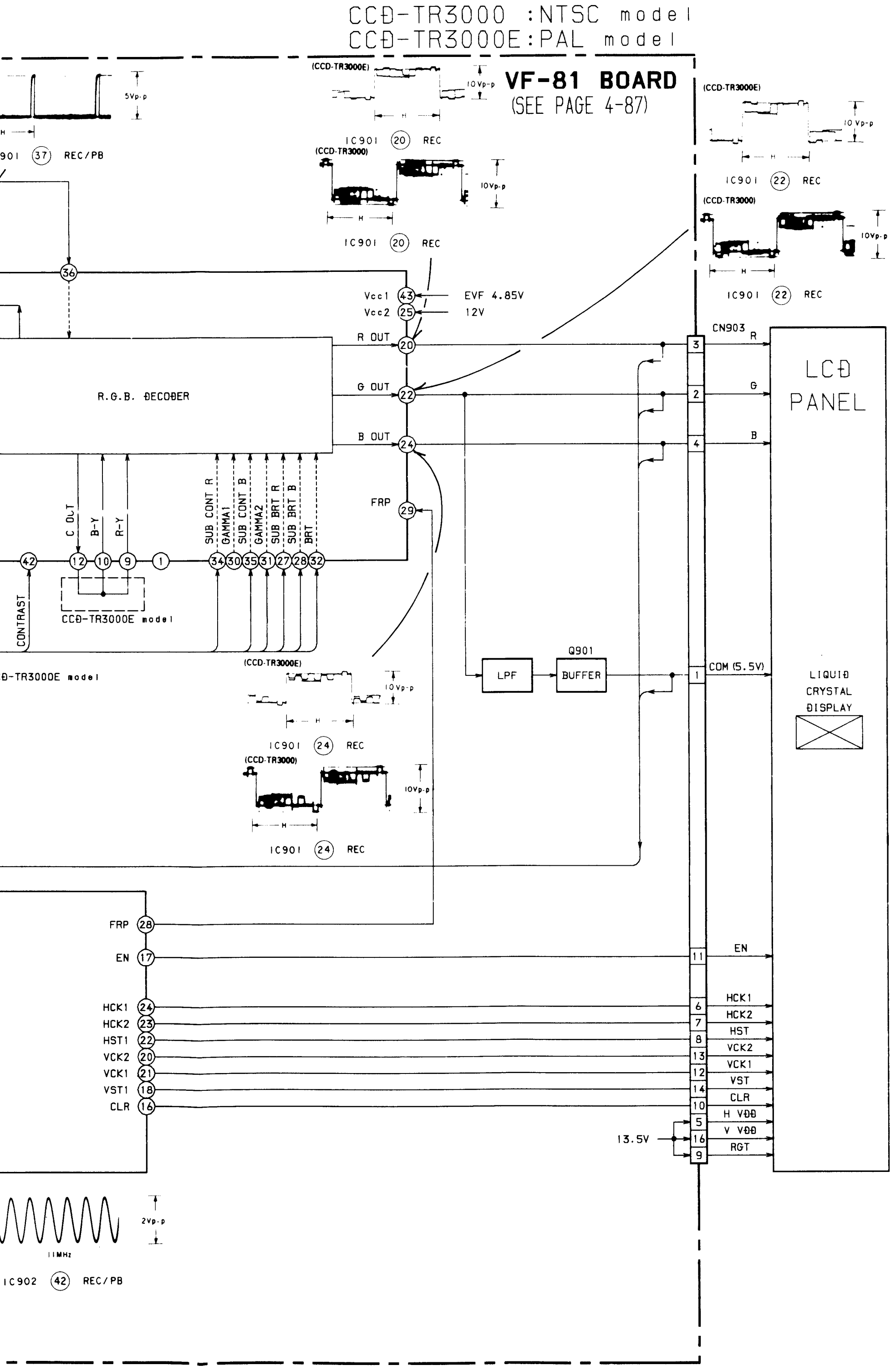
3-8. AUDIO BLOCK DIAGRAM


VS-113 BOARD (SEE PAGE 4-63)
IC802
AFM PROCESS
IC801
AU/EZ SELECT
AU FADE (IC491 ⑨)
VIDEO (2) BLOCK (SEE PAGE 3-15, 16)
PB LOW RF (Q017)
REC MAT (IC491 ⑩)
1.5M DEV (IC491 ⑯)
REC AFM RF (IC001 ①)
VIDEO (1) BLOCK (SEE PAGE 3-14)
AU FSC (Q213)
1.7M DEV (IC491 ⑰)
VIDEO (2) BLOCK (SEE PAGE 3-15)
Z MIC LEV (IC491 ⑮)
Z MIC CONT (IC491 ⑭)
BPF
PB 1.5M
PB 1.7M
1.5M DEV
REC AFM RF
AU FSC
1.7M DEV
MOD/DEMOD
MONITOR
MAT ADJ
ST/MONO DET
RF SWP
NR
ALC
MX
NR
Z
Z
Z
Z
MIC (L)
LINE (L)
MIC (R)
LINE (R)
L
R
Q809
Q808
LCH MIX
MODE
OUTPUT SEL
MAT ON
VA PB
POWER MUTE
VCC
LINE VCC
REG
2.3V
MUTE
09

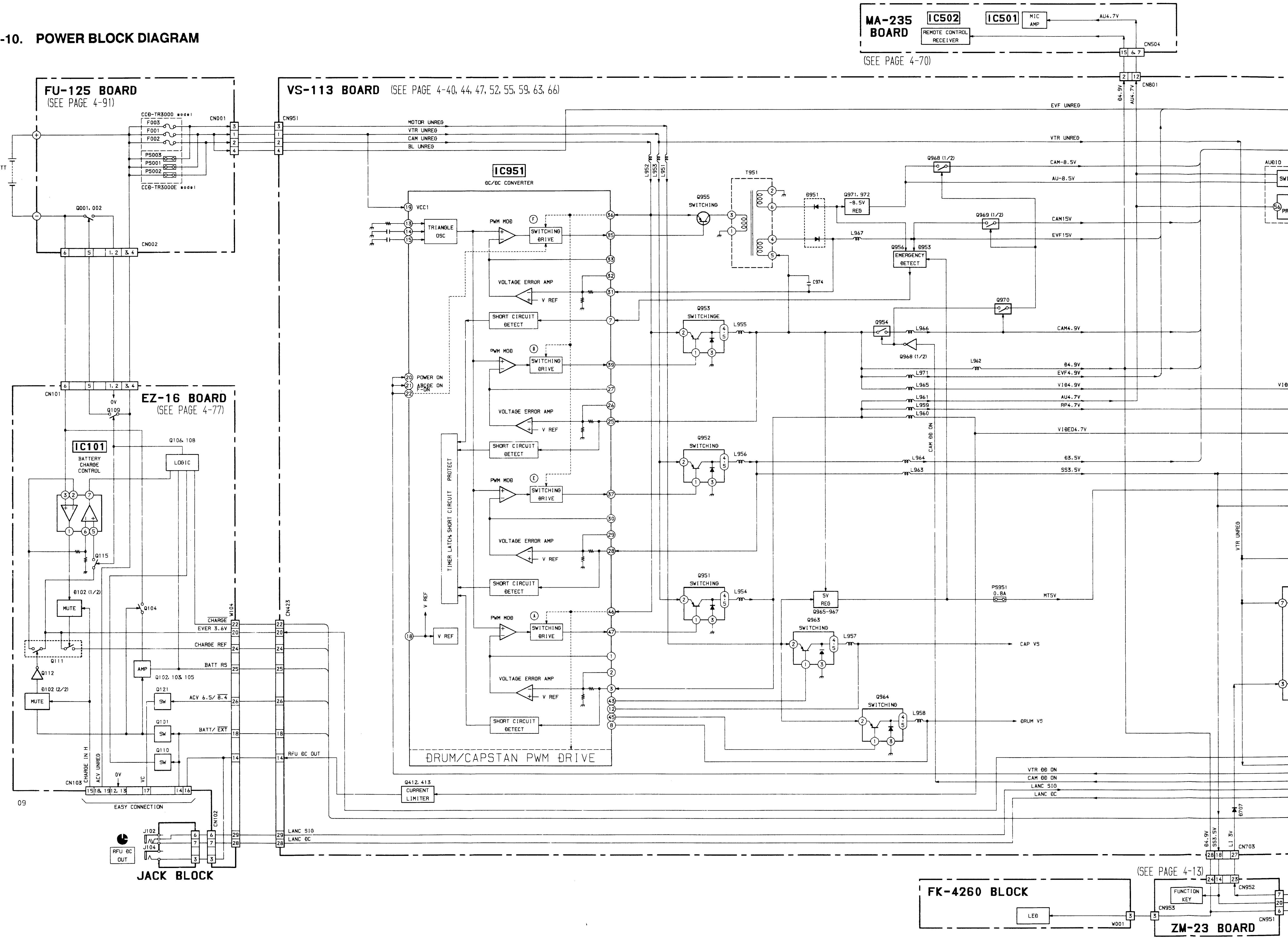

IC801
AU/EZ SELECT
ALC
MIC (L)
LINE (L)
MIC (R)
LINE (R)
SWITCH
Q814
Q807
Q816
EZ IN/OUT
CAM/LINE
Q811
Q809
Q808
Q815
BUFFER
AU IN/OUT
LINE MIX
SP/LP
SEL1
SEL2
Q810
LCH MIX
MODE
OUTPUT SEL
MAT ON
MX ON/OFF
A MUTE
VA PB
VA PB MODE
Q812
ON/OFF MUTE SWITCH
POWER MUTE
REG
VCC
AUDIO 4.9V
LINE VCC
2.3V
Q805
Q804
Q806
Q803
Q802
Q801
AUDIO 4.7V
CN801
CN504
MIC L
MIC R
WIND ON
MIC MONO
EXT MIC DET
Z MIC LEV
Z MIC CONT
MA-235 BOARD (1/2)
(SEE PAGE 4-70)
IC501
MIC AMP
VCC
INT
EXT
5dB AMP
15dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
INV
GAIN CONT
13dB AMP
BUFFER
MIX
INT/EXT
CN501
INT MIC L
MIC L
CN502
INT MIC C
MIC C
CN503
INT MIC R
MIC R
J501
MIC
(SEE PAGE 4-77)
EZ-16 BOARD
CN423
W104
EP R
EP L
EZ-L I/O
EZ-R I/O
AUDIO L
AUDIO R
CN102
CN103
EASY CONECTOR
AUDIO L I/O
AUDIO R I/O
AUDIO I/O L
AUDIO I/O R
JACK BLOCK
J102
HEADPHONE
J201
AUDIO L (MONO)
AUDIO R
JACK MONO (Q417)
WIND ON (IC702 ⑱)
MIC MONO (IC501 ⑩)
EXT MIC DET (IC501 65)
A IN/OUT (IC501 ㊾)
LINE MIX (IC501 ㉑)
SEL 2 (IC501 ㉓)
EZ IN/OUT (IC702 ㊹)
MX ON/OFF (IC501 ㉔)
SEL 1 (IC501 ㉒)
A MUTE (IC501 ㉘)
SP/LP (IC501 ㉚)
VA PB MODE (IC501 72)
CAME/LINE (IC501 ㉖)
RF SWP (IC501 97)
PB 1.7M DET (IC501 ⑦)
SYSCON BLOCK
(VS-113)
(SEE PAGE 3-23)

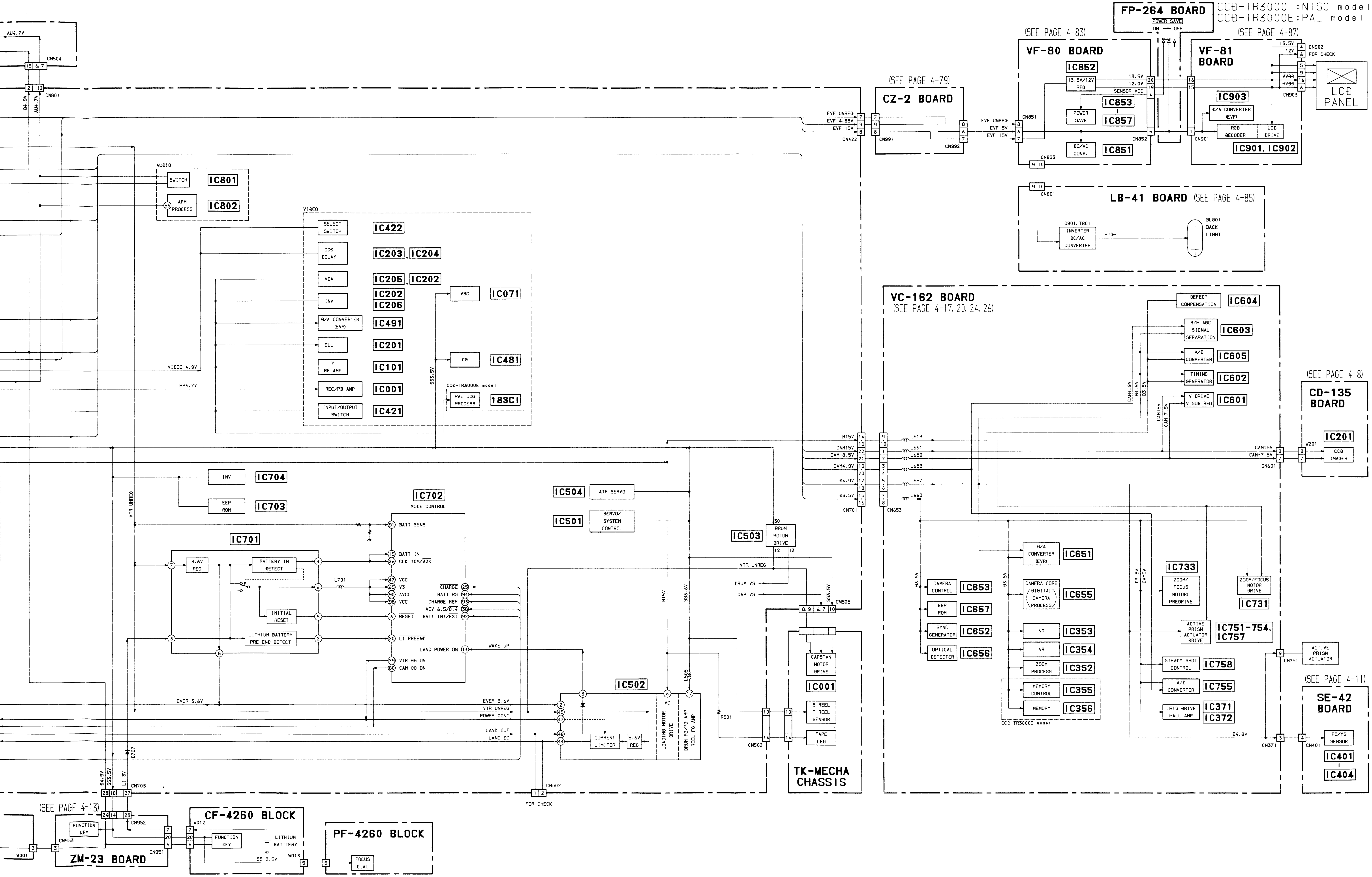
3-9. EVF BLOCK DIAGRAM


VF-80 BOARD (SEE PAGE 4-83)
IC855
IC854
IC853
IC855 (1/4)
SENSOR AMP
IC854
IC853 (1/2)
BUFFER
C872
R898
LPF
IC855 (1/4)
IC855 (1/4)
COMPARATOR
Q858
IC855
C873
R890
LPF
IC853 (1/2)
BUFFER
IC855 (1/4)
COMPARATOR
Q857 (1/2)
(SEE PAGE 4-79)
CZ-2 BOARD
CN991
CN992
CN851
D851
TALLY
CN852
SYSTEM CONTROL (VS-113)
(SEE PAGE 3-23)
TALLY
D1
EVF SCK
SC EVF DA
DD
Y/COMP CONT
SENSOR OUT
SENSOR VCC 5V
SENSOR IN A
SENSOR IN K
Q851, 854, 855
EVF Y
VIDEO (1) (VS-113)
(SEE PAGE 3-12)
EVF C
POWER (VS-113)
(SEE PAGE 3-36)
EVF 4.85V
EVF 15V
EVF UNREG
Q856
IC852
13.5V/12V REG
EVF 15V
Vcc1
EVF 5V
IC857
COUNTER
Q859
(SEE PAGE 4-85)
LB-41 BOARD
T801
BL801
BACK LIGHT
Q801
SWITCHING
D801
STARTER
CN801
CN853
IC851
DC/AC CONVERTER
Vcc2
Vcc1
PWM COMP
OUTPUT
S857 (1/2)
Q853
DISCHARGE SW
SCP
SCP COMP
CURRENT ERROR AMP
PROTECT DET
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
D8522 (1/3)
D853
D852 (1/3)
Q852
START DET. LED DRIVE
D852 (1/3)
09
FP-264 BOARD
D1
EVR CLK
LD
DD
Q192
ON
OFF
POWER SAVE
D192
EVF Y
AUTO ON/OFF
EVF C
Y/COMP CONT
EVR 4.85V
SYNC
INV CUR
VD
13.5V
12.0V
TEST CONNECT
CN901
D903
IC903
EVR (D/A CONVERTER)
D1
CLK
LD
DD
VDD
VCC
BRIGHT
COLOR
HUE/BURST OUT
SUB BRT R
SUB BRT B
CONTRAST
VCO
INV CUR
SUB CONT R
SUB CONT B
GAMMA2
EVF 4.85V
INV CUR
13.5V
12V
13.5V
12V
B OUT
R OUT
G OUT
LC COM
(CCD-TR3000E)
(CCD-TR3000)
0.46Vp-p
0.46Vp-p
5Vp-p
IC901 (3) REC
IC901 (3) REC
IC901 (37) REC/PB
IC901
RGB DECODER
SYNC OUT
VIDEO IN
COLOR
COLOR
C IN
R.G.B. DECODER
0.52Vp-p
Q902
Y/COMP SWITCH
4.43MHz (CCD-TR3000E)
3.58MHz (CCD-TR3000)
IC901 (14) REC/PB
X901
3.58MHz
(CCD-TR3000 model)
4.43MHz
(CCD-TR3000E model)
HUE
Q903
BURST CLEANING
BURST OUT
CONTRAST
C OUT
B-Y
R-Y
CCD-TR3000E model
SUB CONT R
GAMMA1
SUB CONT B
GAMMA2
SUB BRT R
SUB BRT B
BRT
CCD-TR3000 model
CCD-TR3000E model
(CCD-TR3000E)
0.25Vp-p
IC901 (5) REC
(CCD-TR3000)
0.25Vp-p
IC901 (5) PB
(CCD-TR3000E)
IC901 (24) REC
(CCD-TR3000)
IC901 (24) REC
IC904
3.3V REG
EVF 4.85V
VD
HD
SYNC
VDD
VDD
IC902
LCD TIMING GENERATOR
FRP
EN
HCK1
HCK2
HST1
VCK2
VCK1
VST1
CLR
RPO
CKI
CKO
LPF
D901
2Vp-p
11MHz
IC902 (42) REC/PB
PCO
VCO
CN902
FOR CHECK


CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
VF-81 BOARD
(SEE PAGE 4-87)
5Vp-p
H
901 (37) REC/PB
(CCD-TR3000E)
10Vp-p
H
IC901 (20) REC
(CCD-TR3000)
10Vp-p
H
IC901 (20) REC
(CCD-TR3000E)
10Vp-p
H
IC901 (22) REC
(CCD-TR3000)
10Vp-p
H
IC901 (22) REC
(36)
Vcc1 (43)
Vcc2 (25)
EVF 4.85V
12V
R OUT (20)
G OUT (22)
B OUT (24)
R.G.B. DECODER
FRP (29)
C OUT
B-Y
R-Y
SUB CONT R
GAMMA1
SUB CONT B
GAMMA2
SUB BRT R
SUB BRT B
BRT
(42) (12) (10) (9) (1) (34) (30) (35) (31) (27) (28) (32)
CONTRAST
CCD-TR3000E model
D-TR3000E model
CN903
R
G
B
3
2
4
1
LCD PANEL
LPF
Q901
BUFFER
COM (5.5V)
LIQUID CRYSTAL DISPLAY
(CCD-TR3000E)
10Vp-p
H
IC901 (24) REC
(CCD-TR3000)
10Vp-p
H
IC901 (24) REC
FRP (28)
EN (17)
HCK1 (24)
HCK2 (23)
HST1 (22)
VCK2 (20)
VCK1 (21)
VST1 (18)
CLR (16)
11
6
7
8
13
12
14
10
5
16
9
EN
HCK1
HCK2
HST
VCK2
VCK1
VST
CLR
H VDD
V VDD
RGT
13.5V
2Vp-p
11MHz
IC902 (42) REC/PB

3-10. POWER BLOCK DIAGRAM

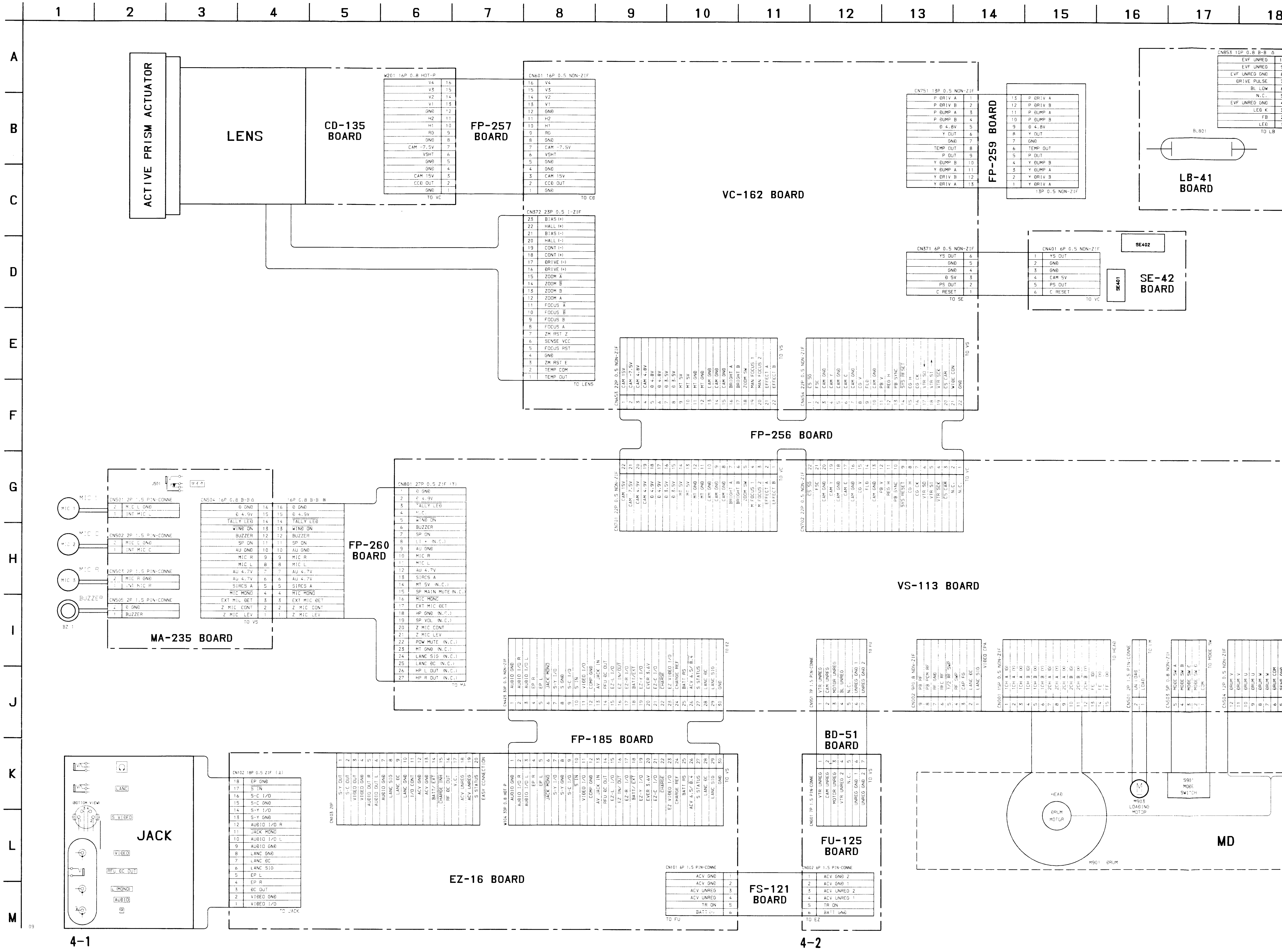

MA-235 BOARD
IC502
IC501
MIC AMP
REMOTE CONTROL RECEIVER
AU4.7V
CN504
(SEE PAGE 4-70)
CN801
FU-125 BOARD
(SEE PAGE 4-91)
CCD-TR3000 model
CCD-TR3000E model
F003
F001
F002
PS003
PS001
PS002
CN001
CN002
BATT
Q001, 002
VS-113 BOARD (SEE PAGE 4-40, 44, 47, 52, 55, 59, 63, 66)
CN951
MOTOR UNREG
VTR UNREG
CAM UNREG
BL UNREG
EVF UNREG
IC951
DC/DC CONVERTER
VCC1
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF
SHORT CIRCUIT DETECT
POWER ON
ABCDE ON
F-ON
TIMER LATCH SHORT CIRCUIT PROTECT
DRUM/CAPSTAN PWM DRIVE
L952
L953
L951
Q955 SWITCHING
T951
D951
Q971, 972 -8.5V REG
L967
C974
Q968 (1/2)
CAM-8.5V
AU-8.5V
Q969 (1/2)
CAM15V
EVF15V
Q956, Q953 EMERGENCY DETECT
Q970
Q953 SWITCHING
L955
Q954
L966
CAM4.9V
L962
D4.9V
L971
EVF4.9V
L965
VIDEO4.9V
L961
AU4.7V
L959
RP4.7V
L960
VIDEO4.7V
CAM DD ON
Q952 SWITCHING
L956
L964
D3.5V
L963
SS3.5V
Q951 SWITCHING
L954
5V REG
Q965-967
PS951 0.8A
MT5V
Q963 SWITCHING
L957
CAP VS
Q964 SWITCHING
L958
DRUM VS
VTR DD ON
CAM DD ON
LANC SIG
LANC DC
D707
D4.9V
SS3.5V
LI 3V
CN703
AU010
VTR UNREG
EZ-16 BOARD
(SEE PAGE 4-77)
CN101
0V
Q109
IC101
BATTERY CHARGE CONTROL
Q106, 108
LOGIC
Q115
Q102 (1/2)
MUTE
Q104
Q111
Q112
Q102 (2/2)
AMP
Q102, 103, 105
Q121
SW
Q101
Q110
W104
CHARGE
EVER 3.6V
CHARGE REF
BATT RS
ACV 6.5/8.4
BATT/EXT
CN423
RFU DC OUT
CHARGE IN H
ACV UNREG
VC
CN103
EASY CONNECTION
Q412, 413 CURRENT LIMITER
CN102
J102
J104
RFU DC OUT
LANC SIG
LANC DC
JACK BLOCK
(SEE PAGE 4-13)
FK-4260 BLOCK
LED
W001
CN952
FUNCTION KEY
CN953
CN951
ZM-23 BOARD

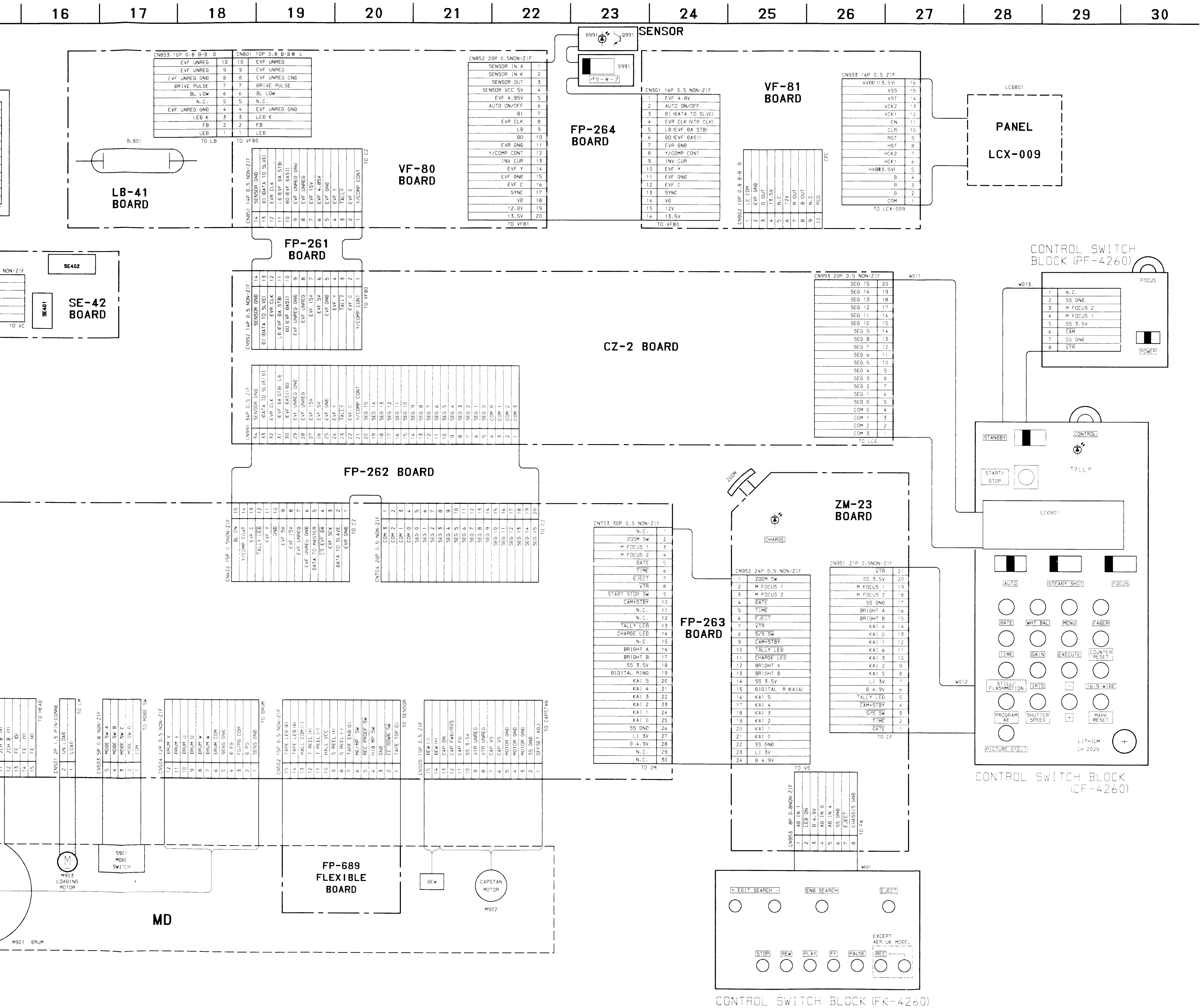

FP-264 BOARD
POWER SAVE
ON OFF
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
(SEE PAGE 4-83)
VF-80 BOARD
IC852
13.5V/12V REG
POWER SAVE
IC853
IC857
DC/AC CONV.
IC851
13.5V
12.0V
SENSOR VCC
CN851
CN852
CN853
(SEE PAGE 4-87)
VF-81 BOARD
13.5V
12V
CN902 FOR CHECK
VVDD
HVDD
CN903
IC903
D/A CONVERTER (EVF)
RGB DECODER
LCD DRIVE
IC901, IC902
CN901
LCD PANEL
(SEE PAGE 4-79)
CZ-2 BOARD
CN991
CN992
EVF UNREG
EVF 4.85V
EVF 15V
CN422
EVF UNREG
EVF 5V
EVF 15V
LB-41 BOARD (SEE PAGE 4-85)
CN801
Q801, T801 INVERTER DC/AC CONVERTER
HIGH
BL801 BACK LIGHT
AU4.7V
CN504
CN801
D4.9V
AU4.7V
AUDIO
SWITCH
IC801
AFM PROCESS
IC802
VIDEO
SELECT SWITCH
IC422
CCD DELAY
IC203, IC204
VCA
IC205, IC202
INV
IC202
IC206
VSC
IC071
D/A CONVERTER (EVR)
IC491
ELL
IC201
Y RF AMP
IC101
CG
IC481
REC/PB AMP
IC001
CCD-TR3000E model
PAL JOG PROCESS
183CI
INPUT/OUTPUT SWITCH
IC421
SS3.5V
VIDEO 4.9V
RP4.7V
INV
IC704
EEP ROM
IC703
VTR UNREG
IC701
3.6V REG
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
L701
IC702
MODE CONTROL
BATT SENS
BATT IN
CLK 10M/32K
VCC
V3
AVCC
VCC
RESET
LI PREEND
VTR DD ON
CAM DD ON
CHARGE
BATT RS
CHARGE REF
ACV 6.5/8.4
BATT INT/EXT
LANC POWER ON
WAKE UP
EVER 3.6V
EVER 3.6V
VTR UNREG
POWER CONT
LANC OUT
LANC DC
D707
D4.9V
SS3.5V
LI 3V
CN703
IC504
ATF SERVO
IC501
SERVO/SYSTEM CONTROL
IC503
DRUM MOTOR DRIVE
VTR UNREG
DRUM VS
CAP VS
MT5V
SS3.6V
SS3.5V
CN505
L505
R501
IC502
VC
LOADING MOTOR DRIVE
DRUM FG/PG AMP REEL FG AMP
CURRENT LIMITER
5.6V REG
CN502
CN002
FOR CHECK
CAPSTAN MOTOR DRIVE
IC001
S REEL T REEL SENSOR
TAPE LED
TK-MECHA CHASSIS
MT5V
CAM15V
CAM-8.5V
CAM4.9V
D4.9V
D3.5V
CN701
CN653
L613
L661
L659
L658
L657
L660
VC-162 BOARD
(SEE PAGE 4-17, 20, 24, 26)
DEFECT COMPENSATION
IC604
S/H AGC SIGNAL SEPARATION
IC603
A/D CONVERTER
IC605
TIMING GENERATOR
IC602
V DRIVE V SUB REG
IC601
CAM4.9V
D4.9V
D3.5V
CAM15V
CAM-7.5V
D3.5V
CAMERA CONTROL
IC653
EEP ROM
IC657
SYNC GENERATOR
IC652
OPTICAL DETECTER
IC656
D/A CONVERTER (EVR)
IC651
D3.5V
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC655
NR
IC353
NR
IC354
ZOOM PROCESS
IC352
MEMORY CONTROL
IC355
MEMORY
IC356
CCD-TR3000E model
IC733
ZOOM/FOCUS MOTORL PREDRIVE
D3.5V
CAM5V
ZOOM/FOCUS MOTOR DRIVE
IC731
ACTIVE PRISM ACTUATOR DRIVE
IC751-754, IC757
STEADY SHOT CONTROL
IC758
A/D CONVERTER
IC755
IRIS DRIVE HALL AMP
IC371
IC372
D4.8V
CN371
CN751
(SEE PAGE 4-8)
CD-135 BOARD
IC201
W201
CCD IMAGER
CAM15V
CAM-7.5V
CN601
ACTIVE PRISM ACTUATOR
(SEE PAGE 4-11)
SE-42 BOARD
PS/YS SENSOR
CN401
IC401
IC404
(SEE PAGE 4-13)
FUNCTION KEY
CN953
CN952
ZM-23 BOARD
CN951
W001
CF-4260 BLOCK
W012
FUNCTION KEY
LITHIUM BATTERY
SS 3.5V
W013
PF-4260 BLOCK
FOCUS DIAL

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


ACTIVE PRISM ACTUATOR
LENS
CD-135 BOARD
FP-257 BOARD
VC-162 BOARD
FP-259 BOARD
LB-41 BOARD
SE-42 BOARD
FP-256 BOARD
VS-113 BOARD
MA-235 BOARD
FP-260 BOARD
FP-185 BOARD
BD-51 BOARD
FU-125 BOARD
FS-121 BOARD
EZ-16 BOARD
JACK
MD
HEAD
DRUM MOTOR
M903 LOADING MOTOR
S901 MODE SWITCH
MIC 1
MIC 2
MIC 3
BUZZER
4-1
4-2


16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
SENSOR
LB-41 BOARD
VF-80 BOARD
FP-264 BOARD
VF-81 BOARD
PANEL
LCX-009
FP-261 BOARD
SE-42 BOARD
CZ-2 BOARD
CONTROL SWITCH BLOCK (PF-4260)
FP-262 BOARD
ZM-23 BOARD
FP-263 BOARD
CONTROL SWITCH BLOCK (CF-4260)
FP-689 FLEXIBLE BOARD
MD
M903 LOADING MOTOR
S901 MODE SWITCH
CAPSTAN MOTOR M902
M901 DRUM
CONTROL SWITCH BLOCK (FK-4260)
CN853 10P 0.8 B-B
CN801 10P 0.8 B-B
CN852 20P 0.5NON-ZIF
CN901 16P 0.5 NON-ZIF
CN903 16P 0.5 ZIF
CN851 14P 0.5 NON-ZIF
CN992 14P 0.5 NON-ZIF
CN993 20P 0.5 NON-ZIF
CN991 34P 0.5 ZIF
CN422 15P 0.5NON-ZIF
CN704 20P 0.5 NON-ZIF
CN703 30P 0.5 NON-ZIF
CN952 24P 0.5 NON-ZIF
CN951 21P 0.5NON-ZIF
CN953 8P 0.8NON-ZIF
CN902 10P 0.8 B-B
STANDBY
CONTROL
TALLY
START/STOP
AUTO
STEADY SHOT
FOCUS
DATE
WHT BAL
MENU
FADER
TIME
GAIN
EXECUTE
COUNTER RESET
STILL/FLASHMOTION
IRIS
16:9 WIDE
PROGRAM AE
SHUTTER SPEED
MARK RESET
PICTURE EFFECT
LITHIUM CR 2025
POWER
CHARGE
ZOOM
EDIT SEARCH
END SEARCH
EJECT
STOP
REW
PLAY
FF
PAUSE
REC
EXCEPT AEP, UK MODEL

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- ○ : Through hole.

* Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in µF unless otherwise noted. pF: µµF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊣W⊢ : nonflammable resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ━━ : B+ Line.
- ━ ━ ━ : B– Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.
- Signal name
  * E/ – L→ $E/\overline{L}$
  * VA PB→VA PB
  * – VA PB→ $\overline{\text{VA PB}}$
  – EDIT→ $\overline{\text{EDIT}}$

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

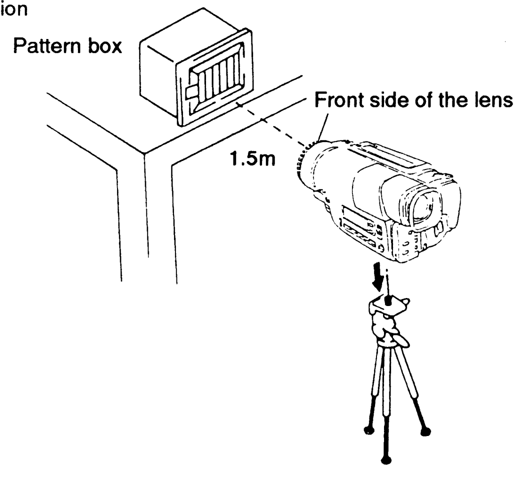
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC mode)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

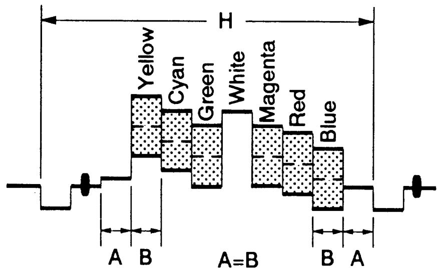


Fig. a (Video output terminal output waveform)

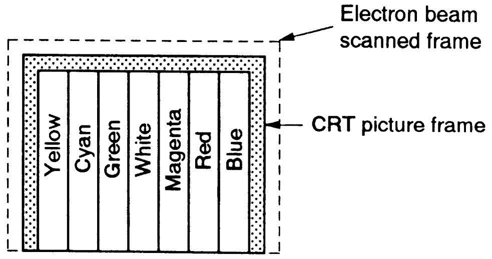


Fig. b (Picture on monitor TV)

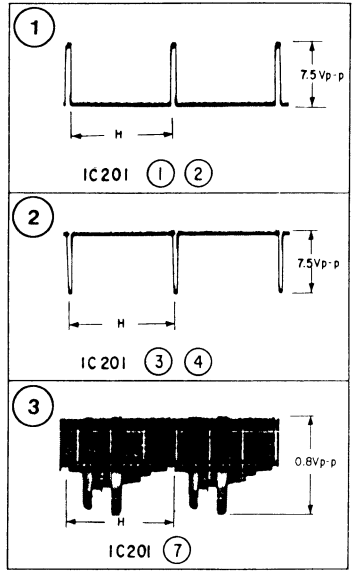
(REC/PB mode)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

(AEP, UK model)

Note: Refer "3-1-6. How to set the REC mode in the model without REC switch" in VIDEO SECTION ADJUSTMENT. (See page 6–42)

CD-135 BOARD



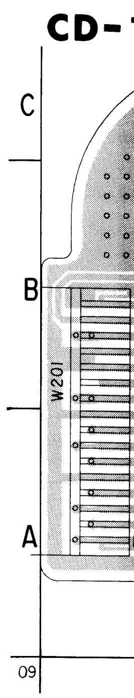
Note on the CCD imager replacement

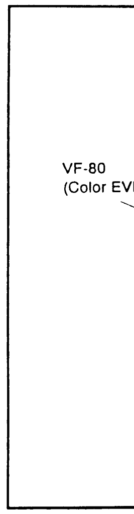
- The CCD imager is not mounted for the already mounted CD-135 board supplied as the repair parts.
  When replacing the CD-135 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-135 (C

— Ref. No. Cl

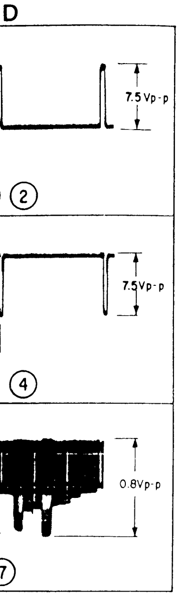
There are f





- **For printe**
- This board
  of layers 2
- Chip transi

D



already mounted

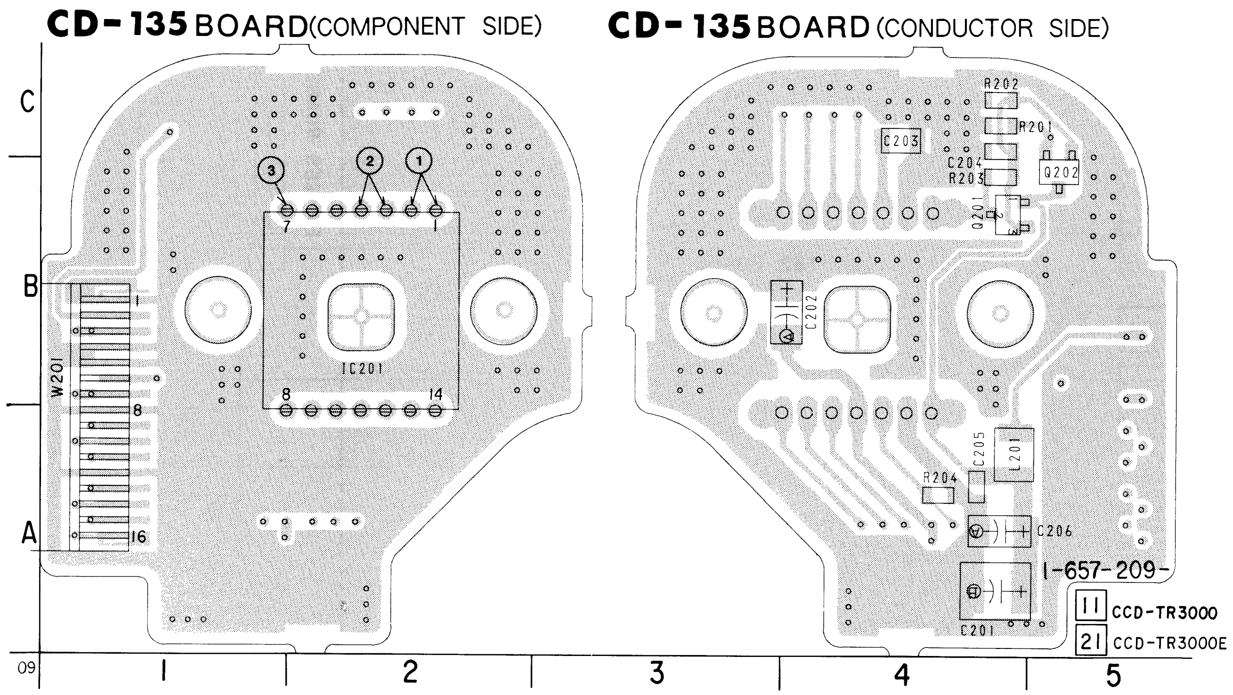
the CCD imager
ard.
k when the CCD

as MOS IC as it
cture.
om dust attached

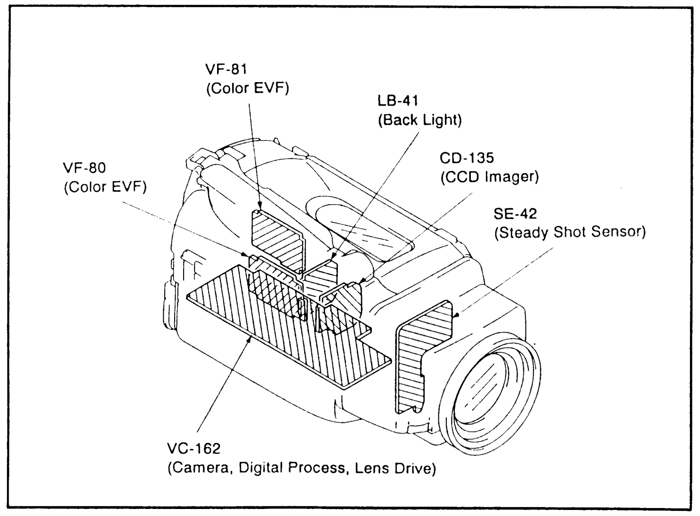
CD-135 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-135 BOARD: 1000 series —

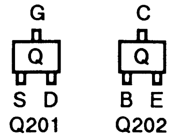
There are few cases that the part isn't mounted in this model is printed on this diagram.


CD-135 BOARD (COMPONENT SIDE)
CD-135 BOARD (CONDUCTOR SIDE)
C
B
A
W201
1
8
16
③
②
①
7
1
IC201
8
14
R202
R201
C203
C204
R203
Q202
Q201
C202
C205
L201
R204
C206
C201
1-657-209-
11 CCD-TR3000
21 CCD-TR3000E
09
1
2
3
4
5

CD-135 BOARD	
C201	A-4
C202	B-4
C203	C-4
C205	A-4
IC201	B-2
L201	A-4
Q201	B-4
Q202	B-5
R201	C-4
R202	C-4
R204	A-4
W201	A-1

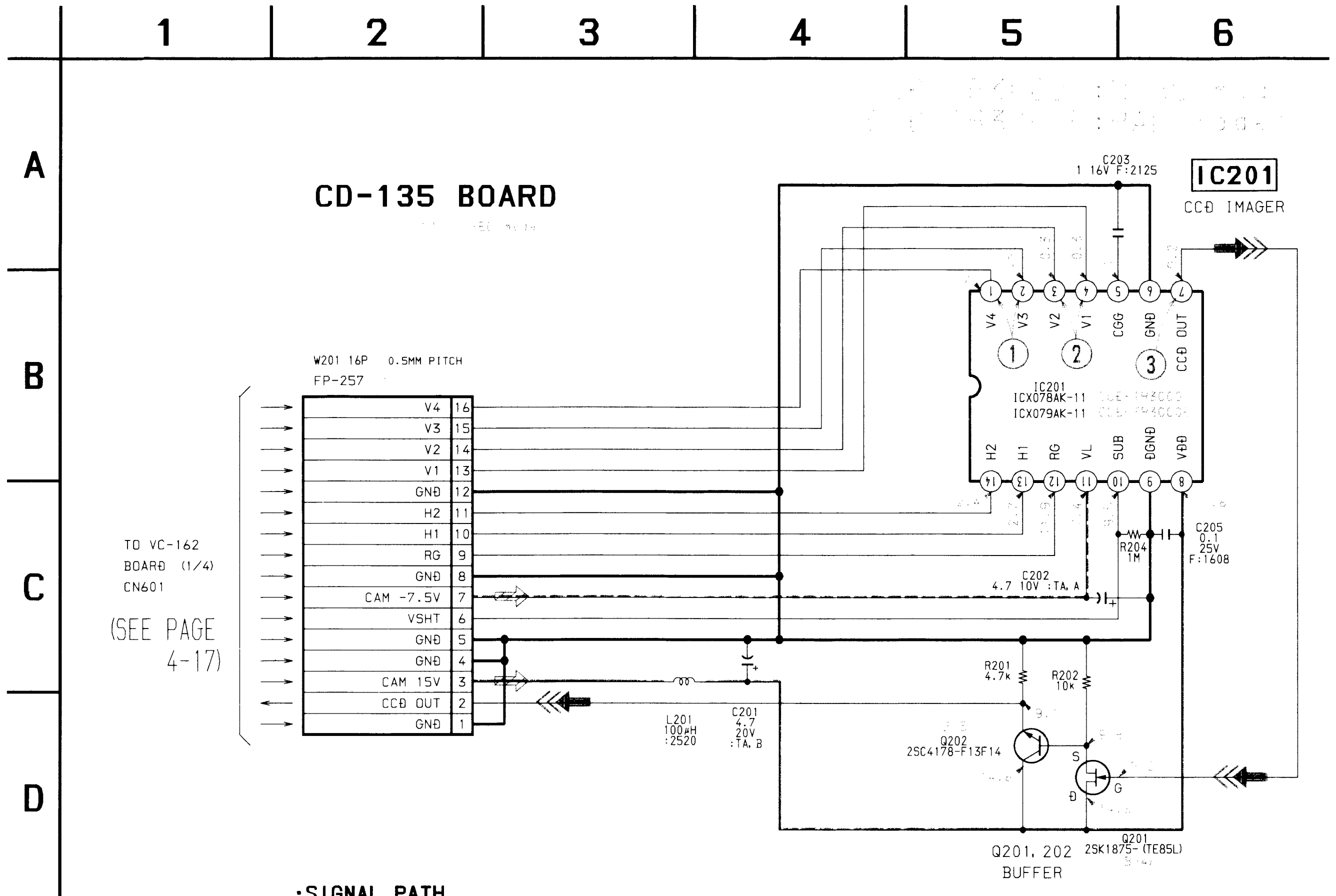

VF-81
(Color EVF)
LB-41
(Back Light)
VF-80
(Color EVF)
CD-135
(CCD Imager)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor


G
Q
S D
Q201
C
Q
B E
Q202

CD-135 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-135 BOARD: 1000 series —


1
2
3
4
5
6
A
B
C
D
E
CD-135 BOARD
IC201
CCD IMAGER
C203
1 16V F:2125
W201 16P 0.5MM PITCH
FP-257
V4 16
V3 15
V2 14
V1 13
GND 12
H2 11
H1 10
RG 9
GND 8
CAM -7.5V 7
VSHT 6
GND 5
GND 4
CAM 15V 3
CCD OUT 2
GND 1
TO VC-162
BOARD (1/4)
CN601
(SEE PAGE
4-17)
V4
V3
V2
V1
CGG
GND
CCD OUT
①
②
③
IC201
ICX078AK-11
ICX079AK-11
H2
H1
RG
VL
SUB
DGND
VDD
C205
0.1
25V
F:1608
R204
1M
C202
4.7 10V :TA, A
R201
4.7k
R202
10k
L201
100µH
:2520
C201
4.7
20V
:TA, B
Q202
2SC4178-F13F14
S
G
D
Q201
2SK1875-(TE85L)
Q201, 202
BUFFER

·SIGNAL PATH

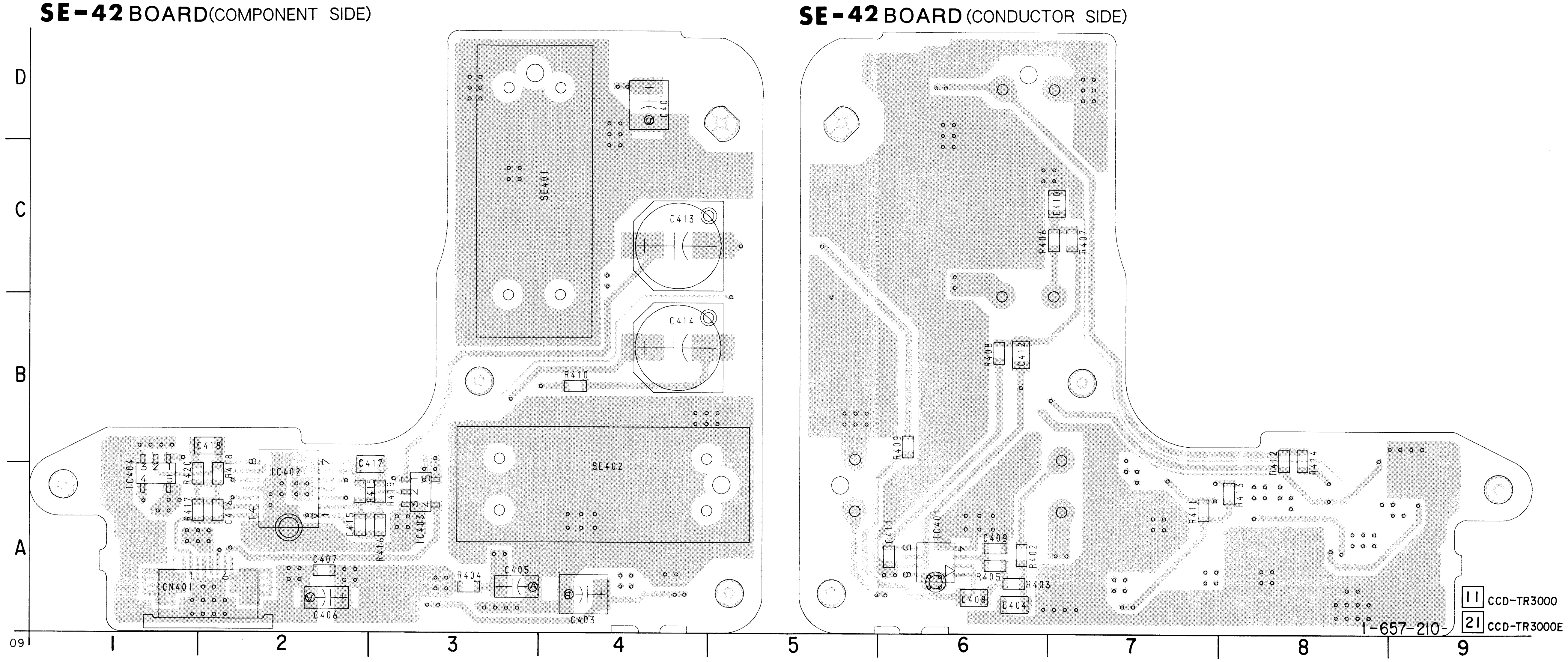
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡»
PB			

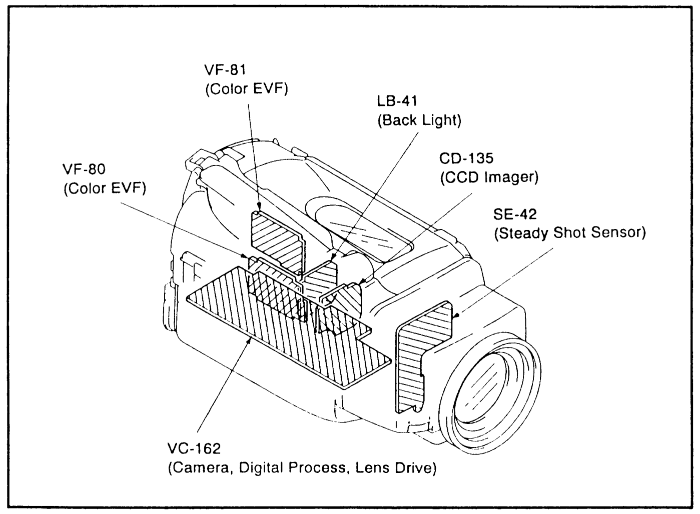
09

SE-42 (STEADY SHOT SENSOR) PRINTED WIRING BOARD

— Ref. No. SE-42 BOARD: 1000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.


SE-42 BOARD(COMPONENT SIDE)
SE-42 BOARD (CONDUCTOR SIDE)
D
C
B
A
09
1
2
3
4
5
6
7
8
9
SE401
SE402
C401
C403
C404
C405
C406
C407
C408
C409
C410
C411
C412
C413
C414
C415
C416
C417
C418
CN401
IC401
IC402
IC403
IC404
R402
R403
R404
R405
R406
R407
R408
R409
R410
R411
R412
R413
R414
R415
R416
R417
R418
R419
R420
1-657-210-
11 CCD-TR3000
21 CCD-TR3000E

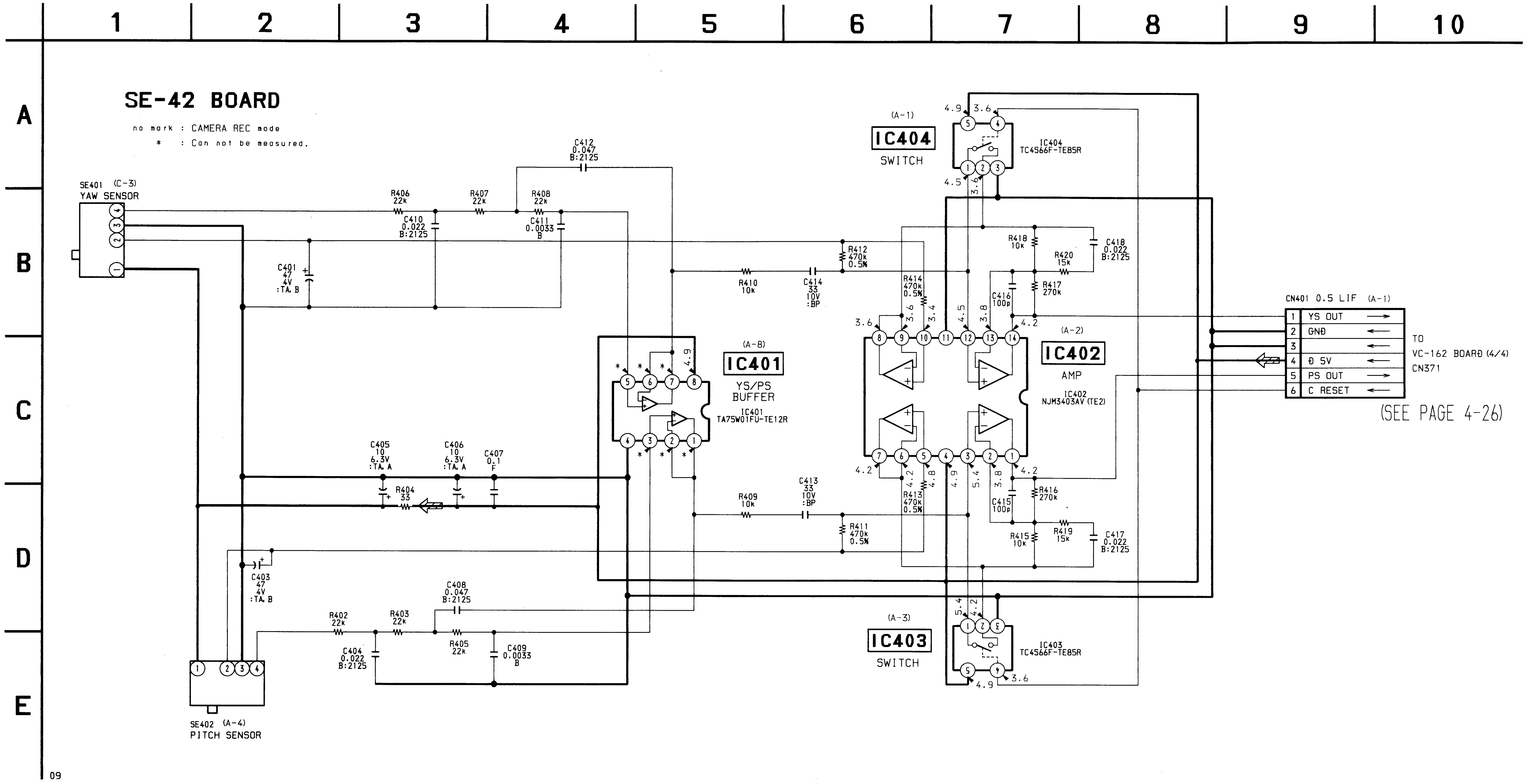

VF-81
(Color EVF)
LB-41
(Back Light)
CD-135
(CCD Imager)
VF-80
(Color EVF)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

SE-42 BOARD

C401	D-4	R402	A-6
C403	A-4	R403	A-6
C404	A-6	R404	A-3
C405	A-3	R405	A-6
C406	A-2	R406	C-7
C407	A-2	R407	C-7
C408	A-6	R408	B-6
C409	A-6	R409	B-6
C410	C-7	R410	B-4
C411	A-6	R411	A-7
C412	B-6	R412	B-8
C413	C-4	R413	A-8
C414	B-4	R414	B-8
C415	A-2	R415	A-2
C416	A-2	R416	A-3
C417	A-2	R417	A-1
C418	B-2	R418	A-2
		R419	A-3
CN401	A-1	R420	A-1
IC401	A-6	SE401	C-3
IC402	A-2	SE402	A-4
IC403	A-3		
IC404	A-1		

SE-42 (STEADY SHOT SENSOR) SCHEMATIC DIAGRAM

— Ref. No. SE-42 BOARD: 1000 series —

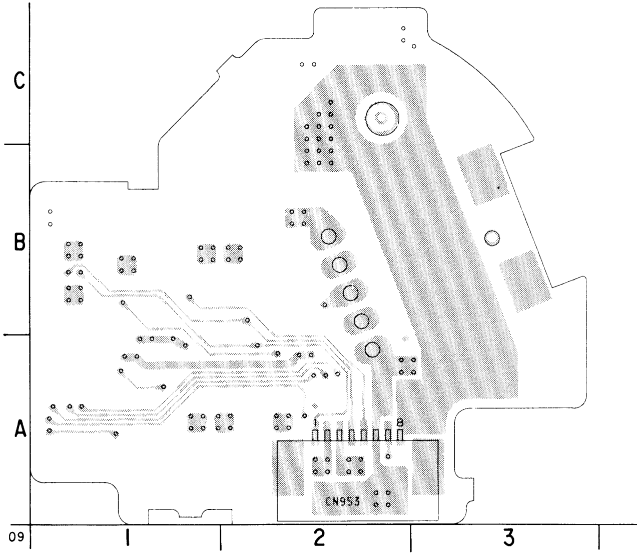

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
SE-42 BOARD
no mark : CAMERA REC mode
* : Can not be measured.
SE401 (C-3)
YAW SENSOR
SE402 (A-4)
PITCH SENSOR
R406 22k
R407 22k
R408 22k
C410 0.022 B:2125
C411 0.0033 B
C412 0.047 B:2125
C401 47 4V :TA, B
R410 10k
C414 33 10V :BP
R412 470k 0.5%
R414 470k 0.5%
(A-8)
IC401
YS/PS BUFFER
IC401 TA75W01FU-TE12R
C405 10 6.3V :TA, A
C406 10 6.3V :TA, A
C407 0.1 F
R404 33
C403 47 4V :TA, B
R409 10k
C413 33 10V :BP
R411 470k 0.5%
R413 470k 0.5%
R402 22k
R403 22k
C404 0.022 B:2125
C408 0.047 B:2125
R405 22k
C409 0.0033 B
(A-1)
IC404
SWITCH
IC404 TC4S66F-TE85R
(A-3)
IC403
SWITCH
IC403 TC4S66F-TE85R
(A-2)
IC402
AMP
IC402 NJM3403AV (TE2)
R418 10k
R420 15k
C418 0.022 B:2125
C416 100p
R417 270k
R416 270k
C415 100p
R415 10k
R419 15k
C417 0.022 B:2125
4.9
3.6
4.5
4.2
3.4
3.8
4.8
5.4
CN401 0.5 LIF (A-1)
1 YS OUT
2 GND
3
4 D 5V
5 PS OUT
6 C RESET
TO
VC-162 BOARD (4/4)
CN371
(SEE PAGE 4-26)
09

ZM-23 (ZOOM SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

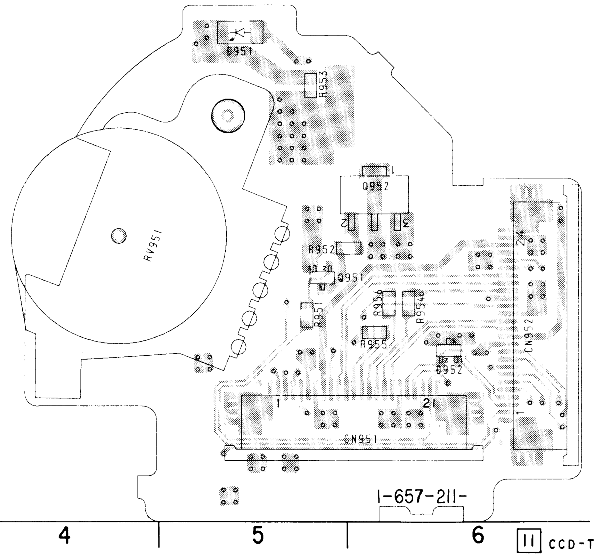
— Ref. No. ZM-23 BOARD: 1000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

ZM-23 BOARD (COMPONENT SIDE)


C
B
A
09
1
2
3
CN953
1
8

ZM-23 BOARD (CONDUCTOR SIDE)

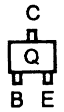

D951
R953
Q952
RV951
R952
Q951
R951
R956
R954
R955
D952
CN952
CN951
1
21
24
1-657-211-
4
5
6

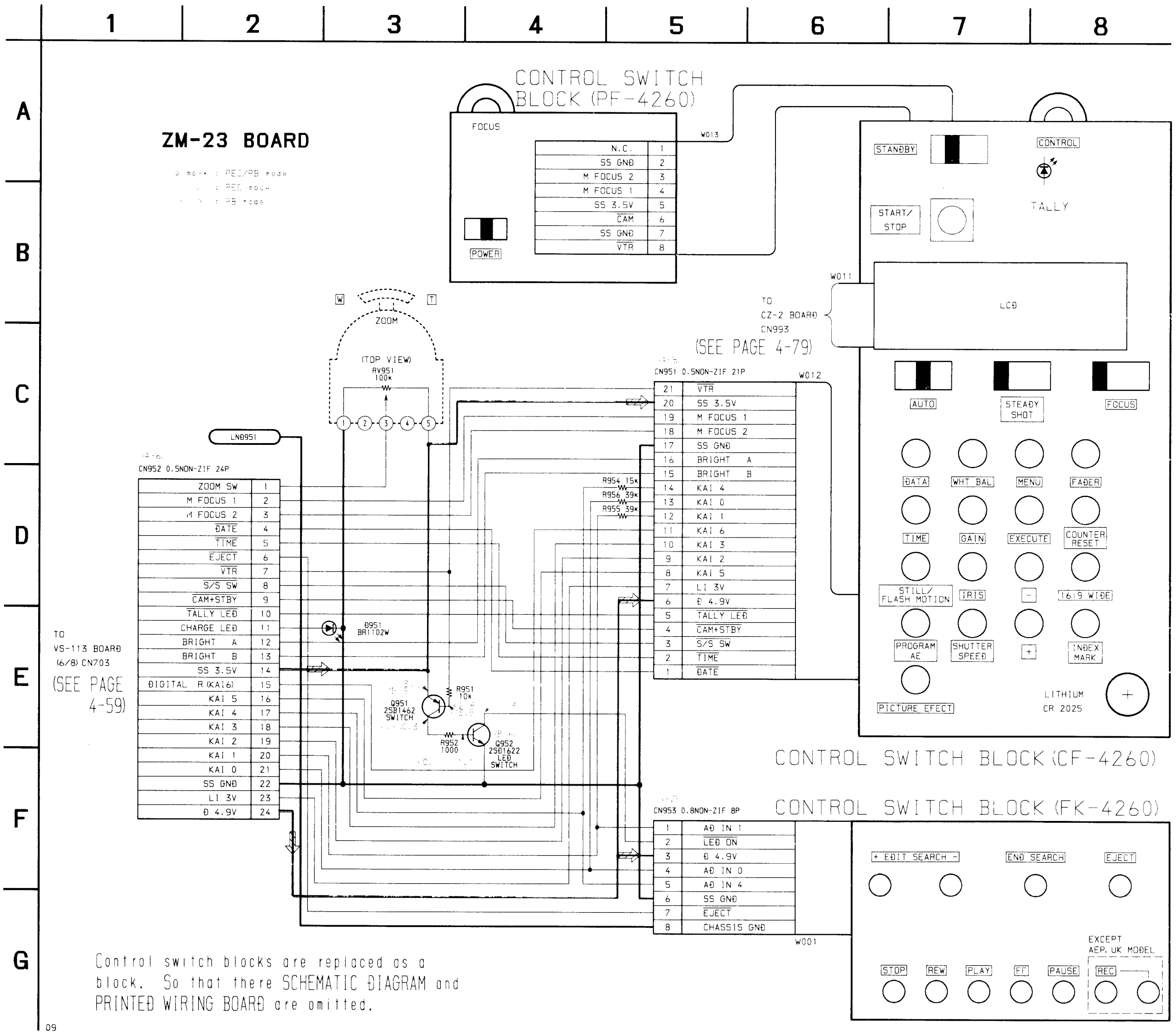
11 CCD-TR3000

21 CCD-TR3000E

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

- Chip transistor




1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
ZM-23 BOARD
CONTROL SWITCH BLOCK (PF-4260)
FOCUS
POWER
N.C. 1
SS GND 2
M FOCUS 2 3
M FOCUS 1 4
SS 3.5V 5
CAM 6
SS GND 7
VTR 8
W013
W
T
ZOOM
(TOP VIEW)
RV951
100k
LND951
CN952 0.5NON-ZIF 24P
ZOOM SW 1
M FOCUS 1 2
M FOCUS 2 3
DATE 4
TIME 5
EJECT 6
VTR 7
S/S SW 8
CAM+STBY 9
TALLY LED 10
CHARGE LED 11
BRIGHT A 12
BRIGHT B 13
SS 3.5V 14
DIGITAL R (KAI6) 15
KAI 5 16
KAI 4 17
KAI 3 18
KAI 2 19
KAI 1 20
KAI 0 21
SS GND 22
LI 3V 23
D 4.9V 24
TO
VS-113 BOARD
(6/8) CN703
(SEE PAGE
4-59)
D951
BR1102W
Q951
2SB1462
SWITCH
R951
10k
R952
1000
Q952
2SD1622
LED
SWITCH
R954 15k
R956 39k
R955 39k
TO
CZ-2 BOARD
CN993
(SEE PAGE 4-79)
CN951 0.5NON-ZIF 21P
W012
W011
21 VTR
20 SS 3.5V
19 M FOCUS 1
18 M FOCUS 2
17 SS GND
16 BRIGHT A
15 BRIGHT B
14 KAI 4
13 KAI 0
12 KAI 1
11 KAI 6
10 KAI 3
9 KAI 2
8 KAI 5
7 LI 3V
6 D 4.9V
5 TALLY LED
4 CAM+STBY
3 S/S SW
2 TIME
1 DATE
STANDBY
CONTROL
TALLY
START/STOP
LCD
AUTO
STEADY SHOT
FOCUS
DATA
WHT BAL
MENU
FADER
TIME
GAIN
EXECUTE
COUNTER RESET
STILL/FLASH MOTION
IRIS
−
16:9 WIDE
PROGRAM AE
SHUTTER SPEED
+
INDEX MARK
PICTURE EFECT
LITHIUM
CR 2025
+
CONTROL SWITCH BLOCK (CF-4260)
CN953 0.8NON-ZIF 8P
CONTROL SWITCH BLOCK (FK-4260)
1 AD IN 1
2 LED ON
3 D 4.9V
4 AD IN 0
5 AD IN 4
6 SS GND
7 EJECT
8 CHASSIS GND
W001
+ EDIT SEARCH −
END SEARCH
EJECT
EXCEPT
AEP, UK MODEL
STOP
REW
PLAY
FF
PAUSE
REC
09

Control switch blocks are replaced as a block. So that there SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.

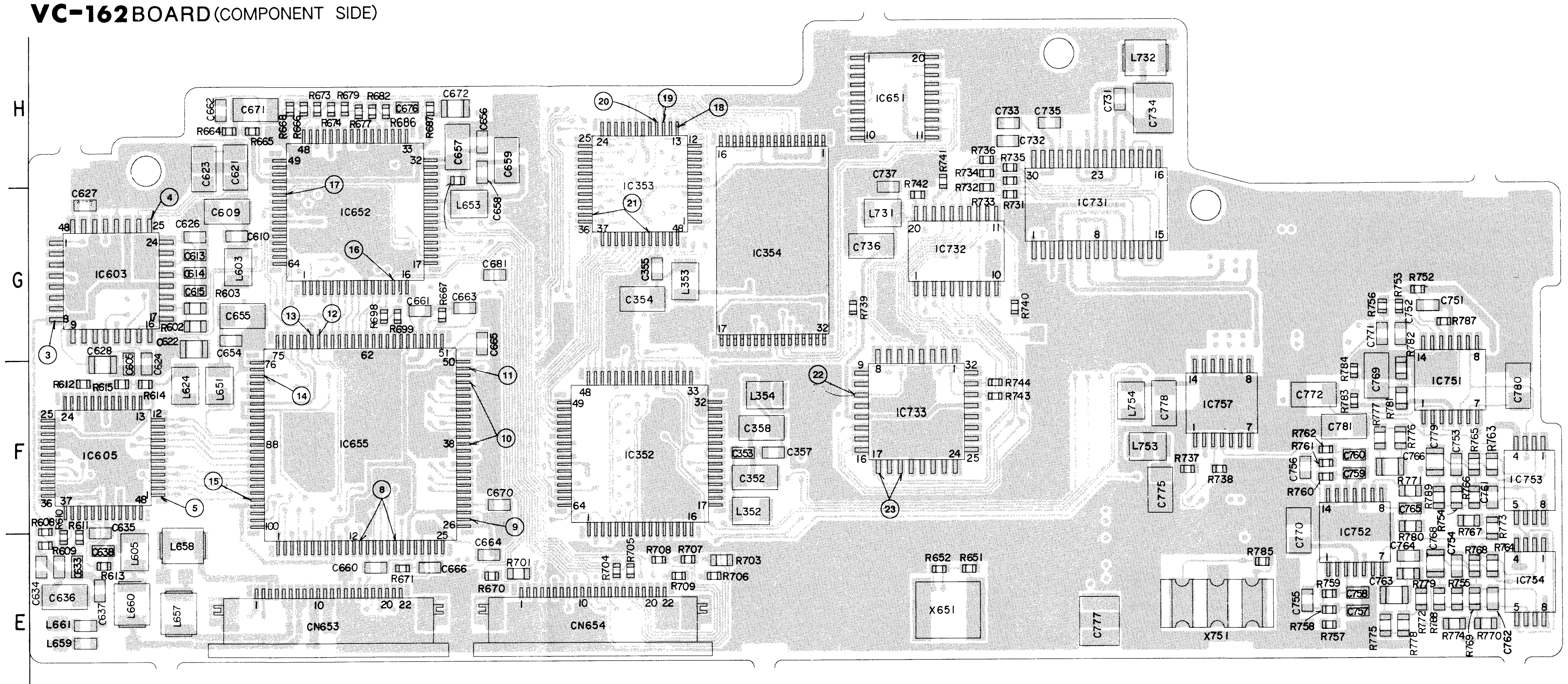
ZM-23 BOARD	
CN951	A-5
CN952	A-6
CN953	A-2
D951	C-5
Q951	B-5
Q952	B-6
R951	B-5
R952	B-5
R954	B-6
R955	A-6
R956	B-6
RV951	B-4

VC-162 (CAMERA, DIGITAL PROCESS, LENS DRIVE) PRINTED WIRING BOARD

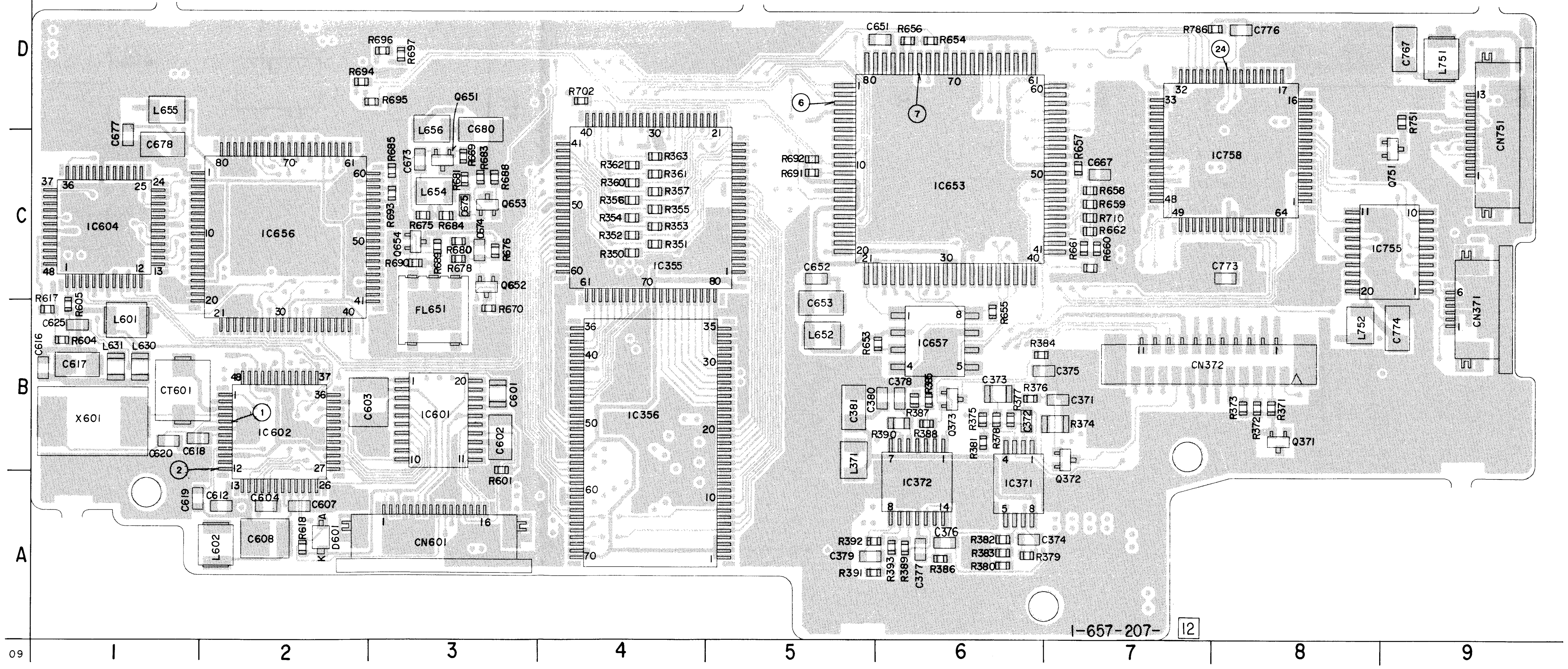
— Ref. No. VC-162 BOARD: 2000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

VC-162 BOARD (COMPONENT SIDE)

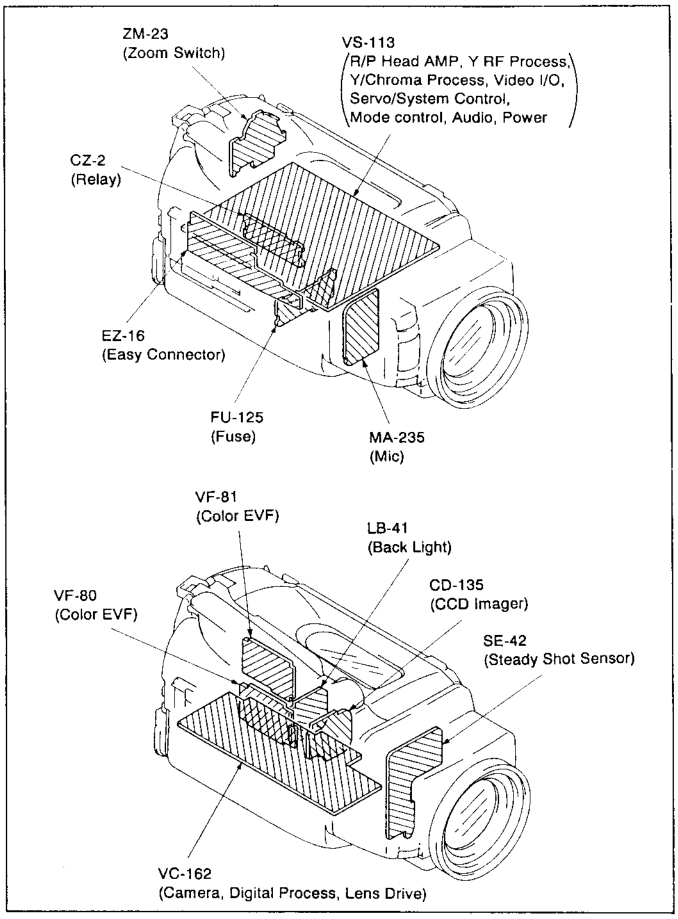

H
G
F
E
IC603
IC605
IC652
IC655
IC353
IC354
IC352
IC651
IC732
IC731
IC733
IC757
IC751
IC752
IC753
IC754
CN653
CN654
X651
X751
L653
L651
L658
L660
L657
L731
L732
L753
L754
L353
L352
L354

VC-162 BOARD (CONDUCTOR SIDE)

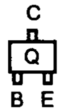

D
C
B
A
IC604
IC656
IC355
IC356
IC653
IC657
IC372
IC371
IC758
IC755
IC601
IC602
CN601
CN372
CN371
CN751
FL651
CT601
X601
L601
L602
L652
L654
L655
L656
L751
L752
L371
1-657-207- 12
1
2
3
4
5
6
7
8
9

VC-162 BOARD

C352	F-5
C353	F-5
C354	G-4
C355	G-4
C357	F-5
C358	F-5
C371	B-7
C372	B-6
C373	B-6
C374	A-6
C375	B-6
C376	A-6
C377	A-6
C378	B-6
C379	A-5
C380	B-6
C381	B-5
C601	B-3
C602	B-3
C603	B-3
C604	A-2
C605	G-1
C607	A-2
C608	A-2
C609	G-2
C610	G-2
C614	G-1
C615	G-1
C616	A-1
C617	B-1
C618	B-1
C619	A-2
C620	B-1
C621	H-2
C622	G-1
C623	H-2
C624	G-1
C625	B-1
C628	G-1
C630	B-1
C631	B-1
C632	E-1
C633	E-1
C634	E-1
C636	E-1
C637	E-1
C638	E-1
C652	C-5
C653	B-5
C654	G-2
C655	G-2
C658	H-3
C659	H-3
C660	E-3
C661	G-3
C662	H-2
C663	G-3
C664	E-3
C665	G-3
C666	E-3
C667	C-7
C671	H-2
C672	H-3
C673	C-3
C674	C-3
C675	C-3
C676	H-3
C677	C-1
C678	C-1
C680	D-3
C681	G-3
C731	H-7
C732	H-6
C733	H-6
C734	H-7
C735	H-6
C736	G-5
C737	H-6
C751	G-8
C753	F-9
C754	E-9
C755	E-8
C756	F-8
C757	E-8
C758	E-8
C759	F-8
C760	F-8
C761	F-9
C762	E-9
C767	D-9
C768	E-9
C769	F-8
C770	F-8
C772	F-8
C773	C-8
C774	B-9
C775	F-7
C776	D-8
C777	E-7
C778	F-7
C779	F-9
C780	F-9
C781	F-8
CN371	B-9
CN372	B-7
CN601	A-3
CN653	E-2
CN654	E-4
CN751	C-9
CT601	B-1
D601	A-2
FL651	B-3
IC352	F-4
IC353	H-4
IC354	G-5
IC355	C-4
IC356	B-4
IC371	A-6
IC372	A-6
IC601	B-3
IC602	B-2
IC603	G-1
IC604	C-1
IC605	F-1
IC651	H-6
IC652	G-2
IC653	C-6
IC655	F-2
IC656	C-2
IC657	B-6
IC731	G-7
IC733	F-6
IC751	F-9
IC752	F-8
IC753	F-9
IC754	E-9
IC755	C-9
IC757	F-7
IC758	C-8
L352	F-5
L353	G-4
L354	F-5
L371	B-5
L601	B-1
L602	A-2
L603	G-2
L604	F-1
L605	E-1
L651	F-2
L652	B-5
L653	G-3
L654	C-3
L655	D-1
L656	D-3
L657	E-1
L658	E-1
L659	E-1
L660	E-1
L661	E-1
L731	G-5
L732	H-7
L751	D-9
L752	B-8
L753	F-7
L754	F-7
Q371	B-8
Q372	B-7
Q373	B-6
Q651	C-3
Q652	C-3
Q653	C-3
Q654	C-3
Q751	C-9
R350	C-4
R351	C-4
R352	C-4
R353	C-4
R354	C-4
R355	C-4
R356	C-4
R357	C-4
R360	C-4
R361	C-4
R362	C-4
R363	C-4
R371	B-8
R372	B-8
R373	B-8
R374	B-7
R375	B-6
R376	B-6
R377	B-6
R378	B-6
R379	A-6
R380	A-6
R381	B-6
R382	A-6
R383	A-6
R384	B-7
R385	B-6
R386	A-6
R387	B-6
R388	B-6
R389	A-6
R390	B-6
R391	A-5
R392	A-5
R393	A-6
R601	B-3
R602	G-1
R603	G-1
R604	B-1
R605	B-1
R610	E-1
R611	E-1
R612	F-1
R613	E-1
R614	F-1
R615	F-1
R617	B-1
R618	A-2
R651	E-6
R652	E-6
R653	B-6
R654	D-6
R655	B-6
R656	D-6
R657	C-7
R658	C-7
R659	C-7
R660	C-7
R661	C-7
R662	C-7
R663	H-3
R664	H-2
R665	H-2
R666	H-2
R667	G-3
R668	H-2
R669	C-3
R670	B-3
R671	E-3
R673	H-2
R674	H-2
R675	C-3
R676	C-3
R677	H-2
R678	C-3
R679	H-2
R680	C-3
R681	C-3
R682	H-3
R683	C-3
R684	C-3
R685	C-3
R686	H-3
R687	H-3
R688	C-3
R689	C-3
R690	C-3
R691	C-5
R692	C-5
R693	C-3
R694	D-2
R695	D-3
R696	D-3
R697	D-3
R698	G-3
R700	E-3
R701	E-3
R702	D-4
R703	E-5
R704	E-4
R705	E-4
R706	E-4
R707	E-4
R708	E-4
R709	E-4
R710	C-7
R731	H-6
R732	H-6
R733	H-6
R734	H-6
R735	H-6
R736	H-6
R737	F-7
R738	F-7
R751	D-9
R753	G-8
R754	F-9
R755	E-9
R757	E-8
R758	E-8
R759	E-8
R760	F-8
R761	F-8
R762	F-8
R763	F-9
R764	E-9
R765	F-9
R766	F-9
R767	F-9
R768	E-9
R769	E-9
R770	E-9
R771	F-9
R772	E-9
R773	F-9
R774	E-9
R776	F-8
R778	E-8
R779	E-9
R780	F-9
R781	F-8
R782	F-8
R785	E-8
R786	D-8
R787	G-8
R788	E-9
R789	F-9
X601	B-1
X651	E-6
X751	E-7

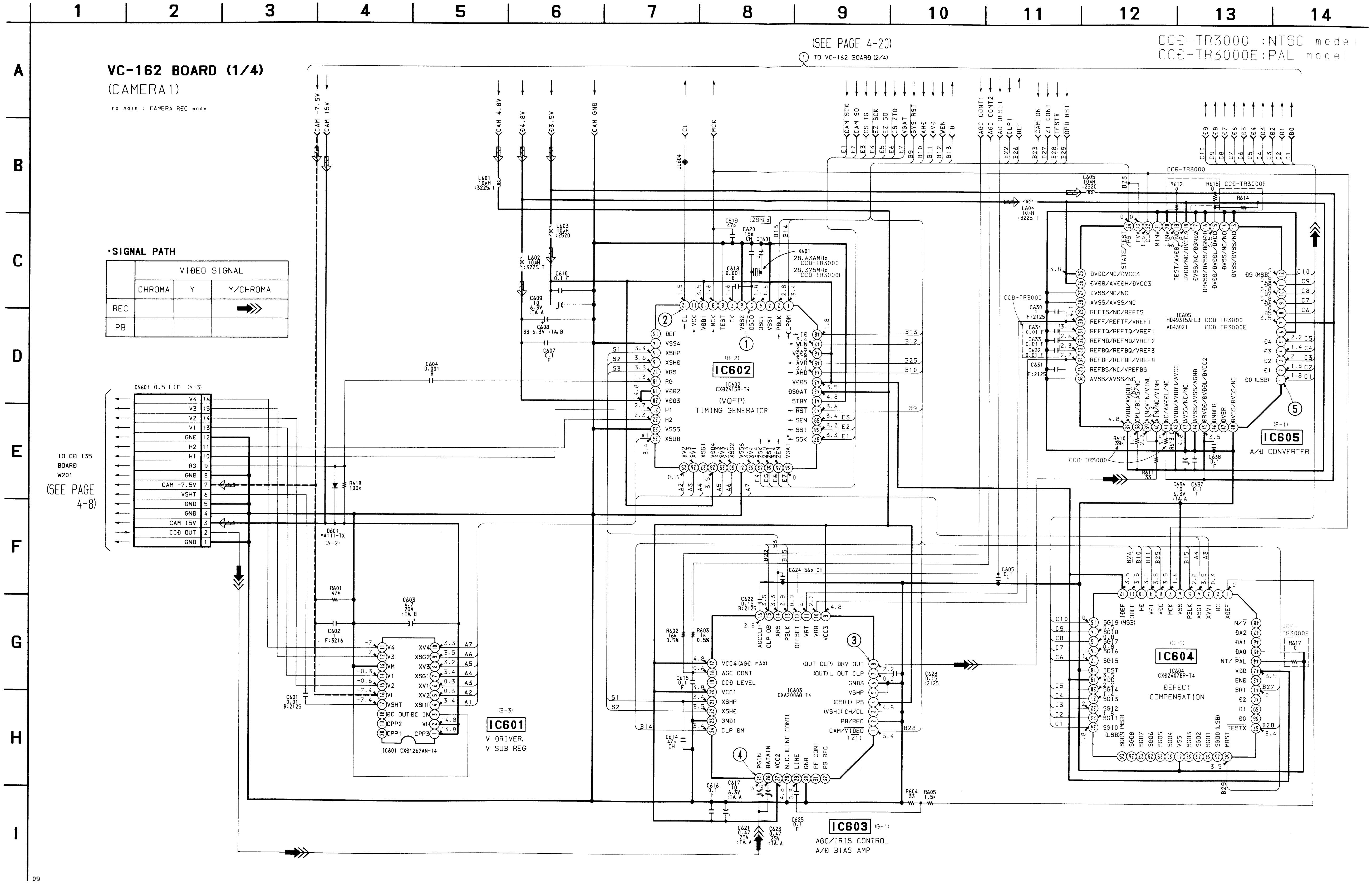

ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process, Y/Chroma Process, Video I/O, Servo/System Control, Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)
VF-81
(Color EVF)
LB-41
(Back Light)
CD-135
(CCD Imager)
VF-80
(Color EVF)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- ○ : Through hole is omitted.
- Chip transistor

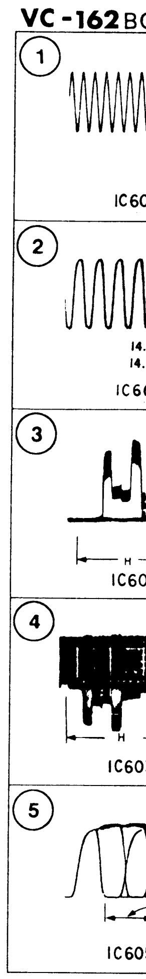


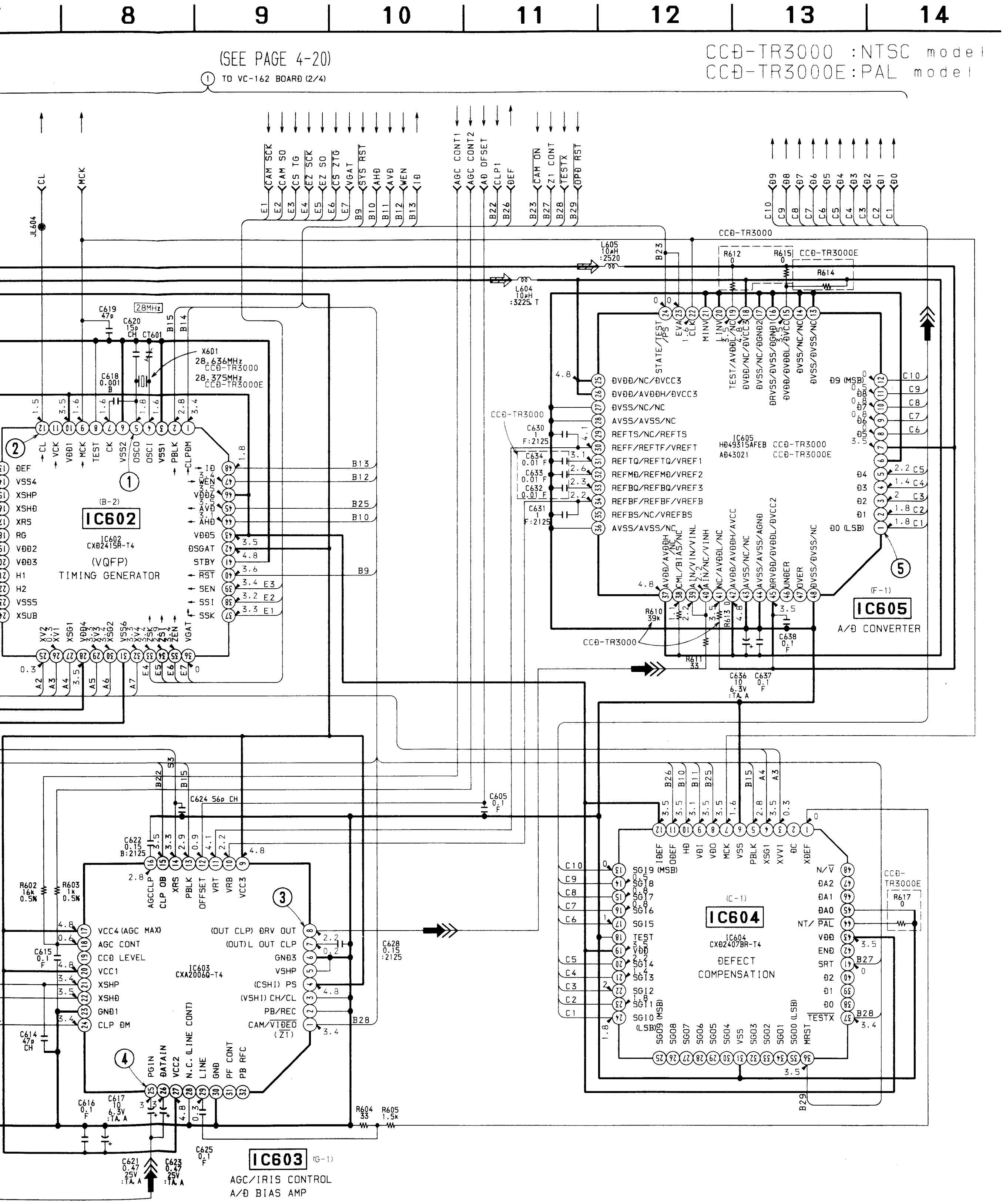
VC-162 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-162 BOARD: 2000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
VC-162 BOARD (1/4)
(CAMERA1)
no mark : CAMERA REC mode
(SEE PAGE 4-20)
① TO VC-162 BOARD (2/4)
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
•SIGNAL PATH
CAM -7.5V
CAM 15V
CAM 4.8V
D4.8V
D3.5V
CAM GND
CL
MCK
CAM SCK
CAM SO
CS TG
CS SCK
EZ SO
CS ZTG
VGAT
SYS RST
AHD
AVD
VEN
ID
AGC CONT1
AGC CONT2
AD OFSET
CLP1
DEF
CAM ON
Z1 CONT
TESTX
DPD RST
D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
CN601 0.5 LIF (A-3)
V4 V3 V2 V1 GND H2 H1 RG GND CAM -7.5V VSHT GND GND CAM 15V CCD OUT GND
TO CD-135 BOARD W201
(SEE PAGE 4-8)
L601 10μH
L602 10μH
L603 10μH
L604 10μH
L605 10μH
C604 0.001 B
C610 0.1 F
C609 10 6.3V
C608 33 6.3V
C607 0.1 F
C619 47p
C620 15p CH
CT601
C618 0.001 B
X601 28.636MHz CCD-TR3000 28.375MHz CCD-TR3000E
IC602 CXD2415R-T4
(VQFP) TIMING GENERATOR
DEF VSS4 XSHP XSHD XRS RG VDD2 VDD3 H1 H2 VSS5 XSUB
ID VEN VDD6 AVD AHD VDD5 OSGAT STBY RST SEN SSI SSK
IC605 HD49315AFEB CCD-TR3000 AD43021 CCD-TR3000E
IC605 A/D CONVERTER
D9 (MSB) D0 (LSB)
R612 R614 R615 CCD-TR3000E
R610 39k
R611 33
C630 C631 C632 C633 C634
C636 10 6.3V
C637 0.1 F
C638 0.1 F
D601 MA111-TX (A-2)
R618 100k
R601 47k
C602 1 F
C603 4.7 20V
C601 0.01 B
IC601 CXD1267AN-T4
IC601 V DRIVER, V SUB REG
XV4 XSG2 XV3 XSG1 XV1 XV2 XSHT DC IN VH CPP3 CPP1 CPP2 DC OUT VSHT VL V2 V1 VM V3 V4
C624 56p CH
C622 0.15 B
R602 16k 0.5%
R603 1k 0.5%
C615 0.1 F
C614 47p CH
C616 0.1 F
C617 10 6.3V
C621 0.47 25V
C623 0.47 25V
C625 0.1 F
C628 0.15
C605 0.1 F
R604 33
R605 1.5k
IC603 CXA2006Q-T4
IC603 AGC/IRIS CONTROL A/D BIAS AMP
VCC4 (AGC MAX) AGC CONT CCD LEVEL VCC1 XSHP XSHD GND1 CLP DM
(OUT CLP) DRV OUT (OUT)L OUT CLP GND3 VSHP (CSH1) PS (VSH1) CH/CL PB/REC CAM/VIDEO (Z1)
IC604 CXD2407BR-T4
IC604 DEFECT COMPENSATION
SG19 (MSB) SG10 (LSB)
R617 0
CCD-TR3000E
① ② ③ ④ ⑤

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡⟫
PB			


VC-162BO
①
IC60
②
14.
14.
IC60
③
H
IC60
④
H
IC60
⑤
IC60



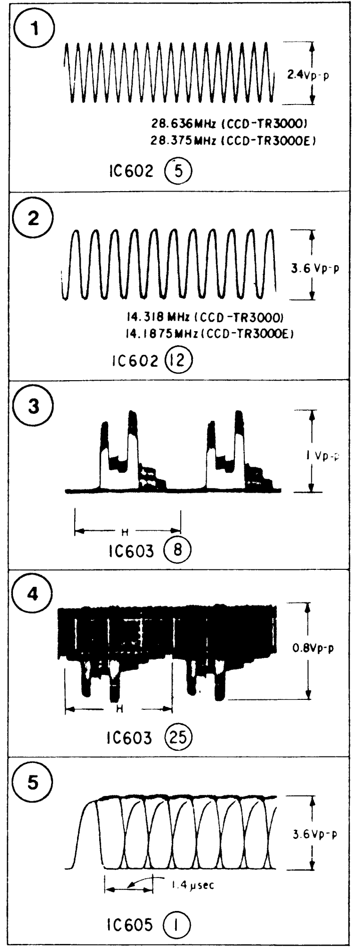
(SEE PAGE 4-20)

① TO VC-162 BOARD (2/4)

CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model

8
9
10
11
12
13
14
IC602
CXD2415R-T4
(VQFP)
TIMING GENERATOR
X601
28.636MHz CCD-TR3000
28.375MHz CCD-TR3000E
IC605
HD49315AFEB CCD-TR3000
AD43021 CCD-TR3000E
IC605
A/D CONVERTER
IC603
CXA2006Q-T4
IC603
AGC/IRIS CONTROL
A/D BIAS AMP
IC604
CXD2407BR-T4
IC604
DEFECT COMPENSATION

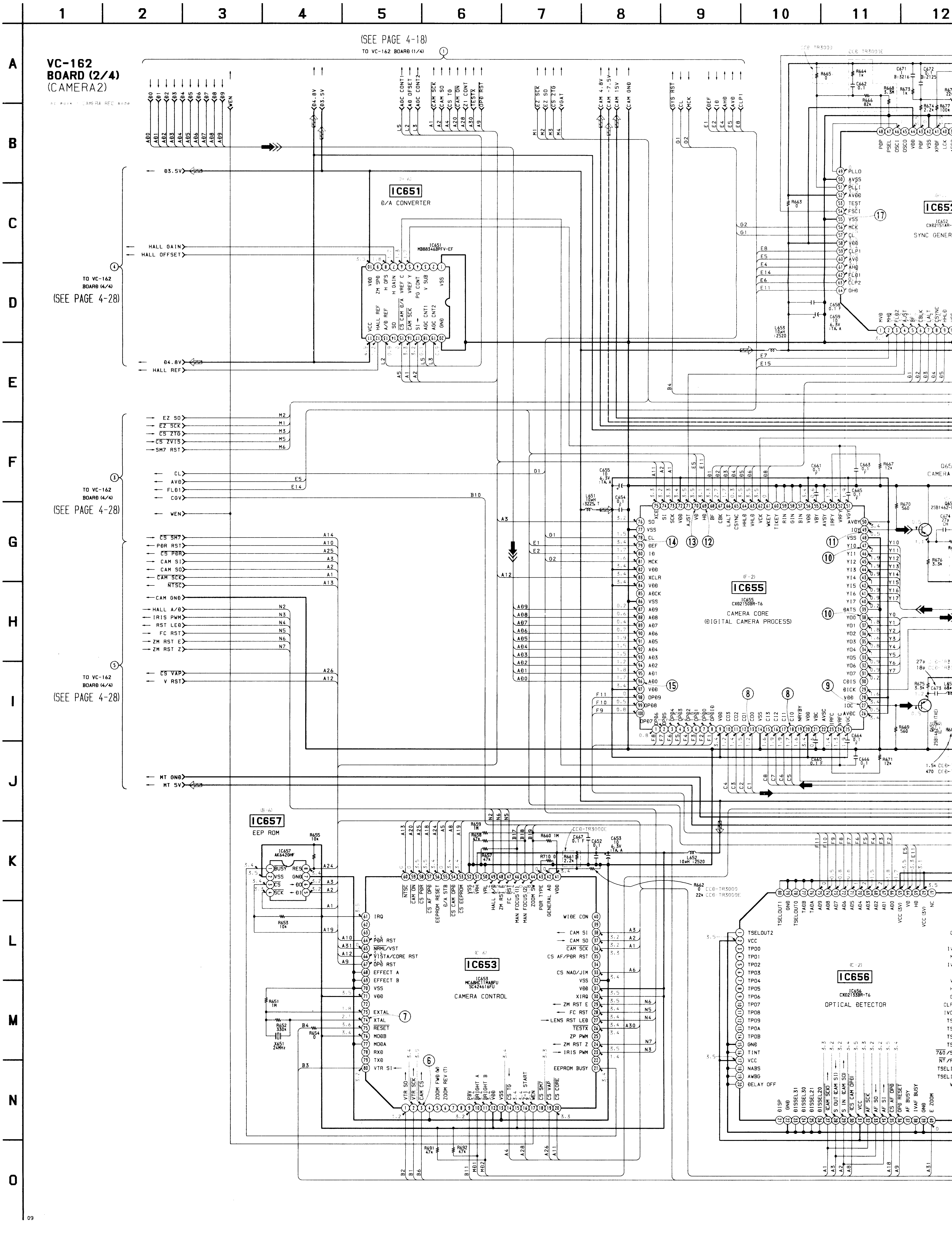
VC-162 BOARD (1/4)



VC-162 (CAMERA) SCHEMATIC DIAGRAM

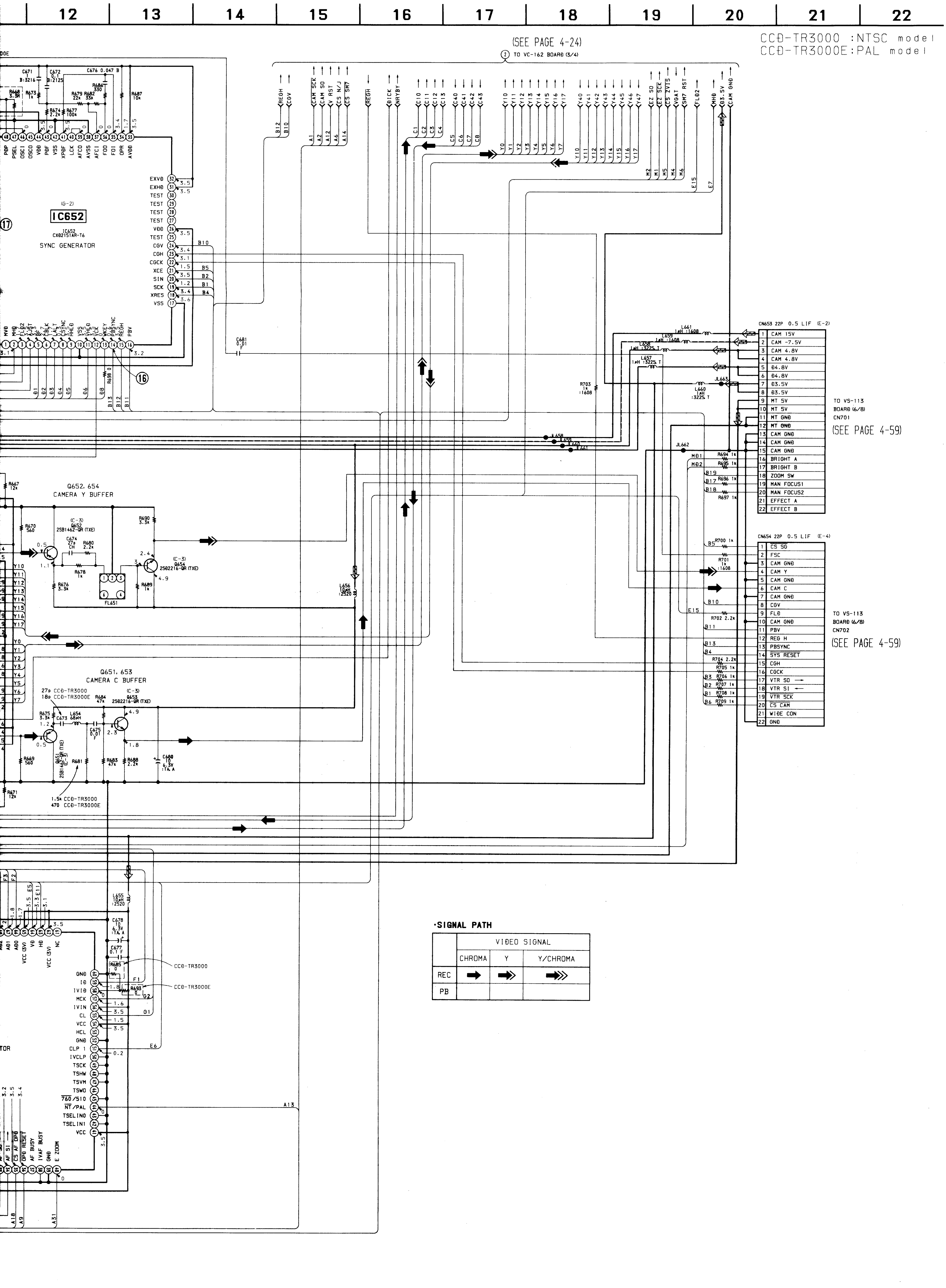
— Ref. No. VC-162 BOARD: 2000 series —

- Refer to page 4-14 for Printed Wiring Board.



VC-162
BOARD (2/4)
(CAMERA2)
(SEE PAGE 4-18)
TO VC-162 BOARD (1/4)
TO VC-162 BOARD (4/4)
(SEE PAGE 4-28)
IC651
D/A CONVERTER
IC651 MB88346BPFV-EF
IC652
SYNC GENERATOR
IC655
IC655 CXD2150BR-T6
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC657
EEP ROM
IC657 AK6420HF
IC653
IC653 MC68HC11MABFU SC42461GFU
CAMERA CONTROL
IC656
IC656 CXD2133BR-T6
OPTICAL DETECTOR
HALL GAIN
HALL OFFSET
HALL REF
D3.5V
D4.8V
EZ SO
EZ SCK
CS ZTG
CS ZVIS
SM7 RST
CL
AVD
FLD1
CGV
WEN
CS SM7
PDR RST
CS PDR
CAM SI
CAM SO
CAM SCK
NTSC
CAM GND
HALL A/D
IRIS PWM
RST LED
FC RST
ZM RST E
ZM RST Z
CS VAP
V RST
MT GND
MT 5V
X651 24MHz
CCD-TR3000
CCD-TR3000E

CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model

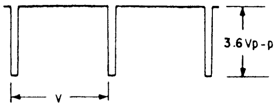

12
13
14
15
16
17
18
19
20
21
22
(SEE PAGE 4-24)
② TO VC-162 BOARD (3/4)
IC652
IC652 CX021S1AR-T6
SYNC GENERATOR
⑰
⑯
EXVD
EXHD
TEST
VDD
CGV
CGH
CGCK
XCE
SIN
SCK
XRES
VSS
Q652, 654
CAMERA Y BUFFER
Q652 2SB1462-QR (TXE)
Q654 2SD2216-QR (TXE)
FL651
L656 10μH :2520
Q651, 653
CAMERA C BUFFER
27p CCD-TR3000
18p CCD-TR3000E
Q653 2SD2216-QR (TXE)
L654 68μH
1.5k CCD-TR3000
470 CCD-TR3000E
L655 10μH :2520
CCD-TR3000
CCD-TR3000E
GND
ID
IVID
MCK
IVIN
CL
VCC
HCL
GND
CLP 1
IVCLP
TSCK
TSHW
TSVW
TSWD
760/510
NT/PAL
TSELIN0
TSELIN1
VCC
A13
CN653 22P 0.5 LIF (E-2)
1 CAM 15V
2 CAM -7.5V
3 CAM 4.8V
4 CAM 4.8V
5 D4.8V
6 D4.8V
7 D3.5V
8 D3.5V
9 MT 5V
10 MT 5V
11 MT GND
12 MT GND
13 CAM GND
14 CAM GND
15 CAM GND
16 BRIGHT A
17 BRIGHT B
18 ZOOM SW
19 MAN FOCUS1
20 MAN FOCUS2
21 EFFECT A
22 EFFECT B
TO VS-113 BOARD (6/8) CN701
(SEE PAGE 4-59)
CN654 22P 0.5 LIF (E-4)
1 CS SG
2 FSC
3 CAM GND
4 CAM Y
5 CAM GND
6 CAM C
7 CAM GND
8 CGV
9 FLD
10 CAM GND
11 PBV
12 REG H
13 PBSYNC
14 SYS RESET
15 CGH
16 CGCK
17 VTR SO
18 VTR SI
19 VTR SCK
20 CS CAM
21 WIDE CON
22 GND
TO VS-113 BOARD (6/8) CN702
(SEE PAGE 4-59)

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛»
PB			

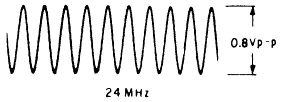
VC-162 BOARD(2/4)

⑥



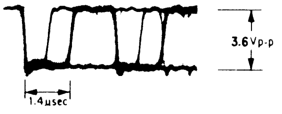
IC653 ③

⑦



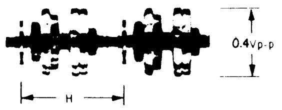
IC653 (74)

⑧



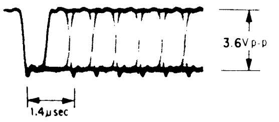
IC655 ⑬ ⑱

⑨



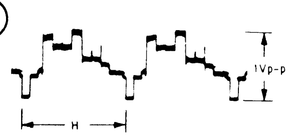
IC655 ㉗

⑩



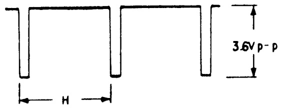
IC655 ㊳ ㊼

⑪



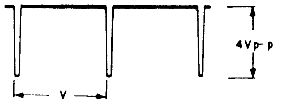
IC655 ㊾

⑫



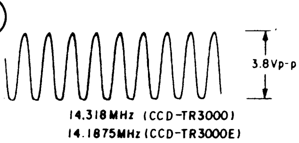
IC655 (69)

⑬



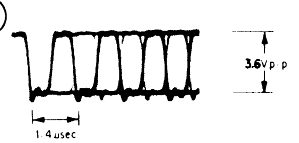
IC655 (70)

⑭



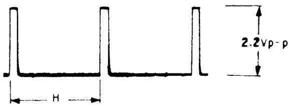
IC655 (78)

⑮



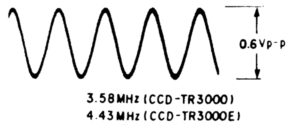
IC655 (96)

⑯



IC652 ⑭

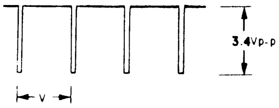
⑰



IC652 (54)

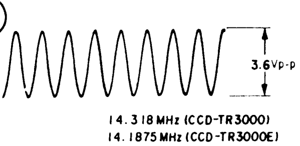
VC-162 BOARD(3/4)

⑱



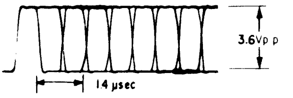
IC353 ⑬

⑲



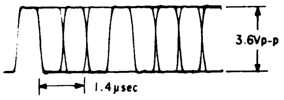
IC353 ⑮

⑳



IC353 ⑯ ⑰

㉑

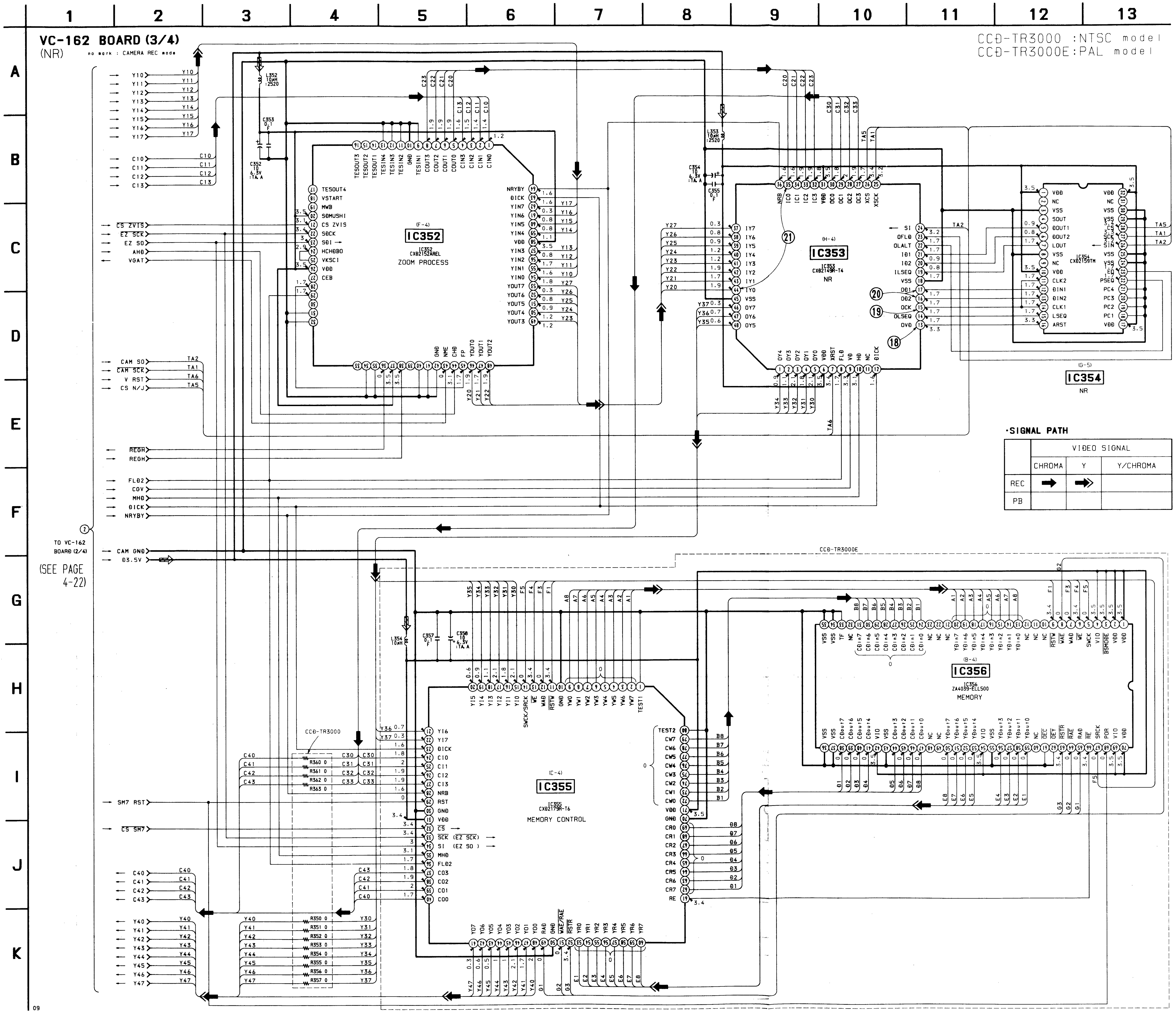


IC353 ㉟ ㊹

VC-162 (DIGITAL PROCESS) SCHEMATIC DIAGRAM

— Ref. No. VC-162 BOARD: 2000 series —

- Refer to page 4-14 for Printed Wiring Board.


1
2
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6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K
VC-162 BOARD (3/4)
(NR)
no mark : CAMERA REC mode
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
IC352
CXD2152AREL
ZOOM PROCESS
IC353
CXD2149R-T4
NR
IC354
CXD2159TM
NR
IC355
CXD2179R-T6
MEMORY CONTROL
IC356
ZA4059-ELL500
MEMORY
L352 10μH
L353 10μH
L354 10μH
TO VC-162 BOARD (2/4)
(SEE PAGE 4-22)
CAM GND
D3.5V
CCD-TR3000
CCD-TR3000E

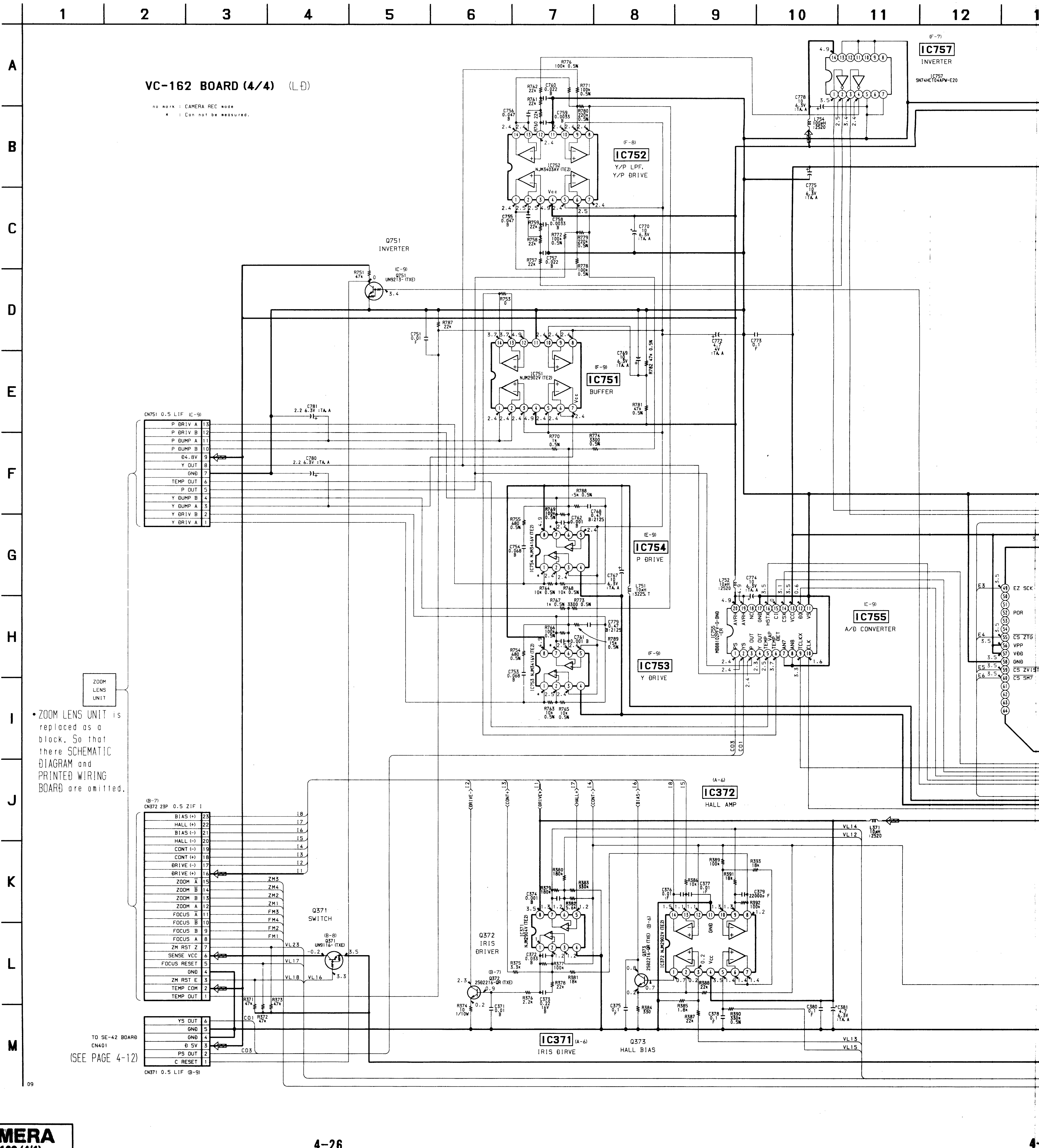
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	
PB			

VC-162 (LENS DRIVE) SCHEMATIC DIAGRAM

— Ref. No. VC-162 BOARD: 2000 series —

- Refer to page 4–14 for Printed Wiring Board.


1
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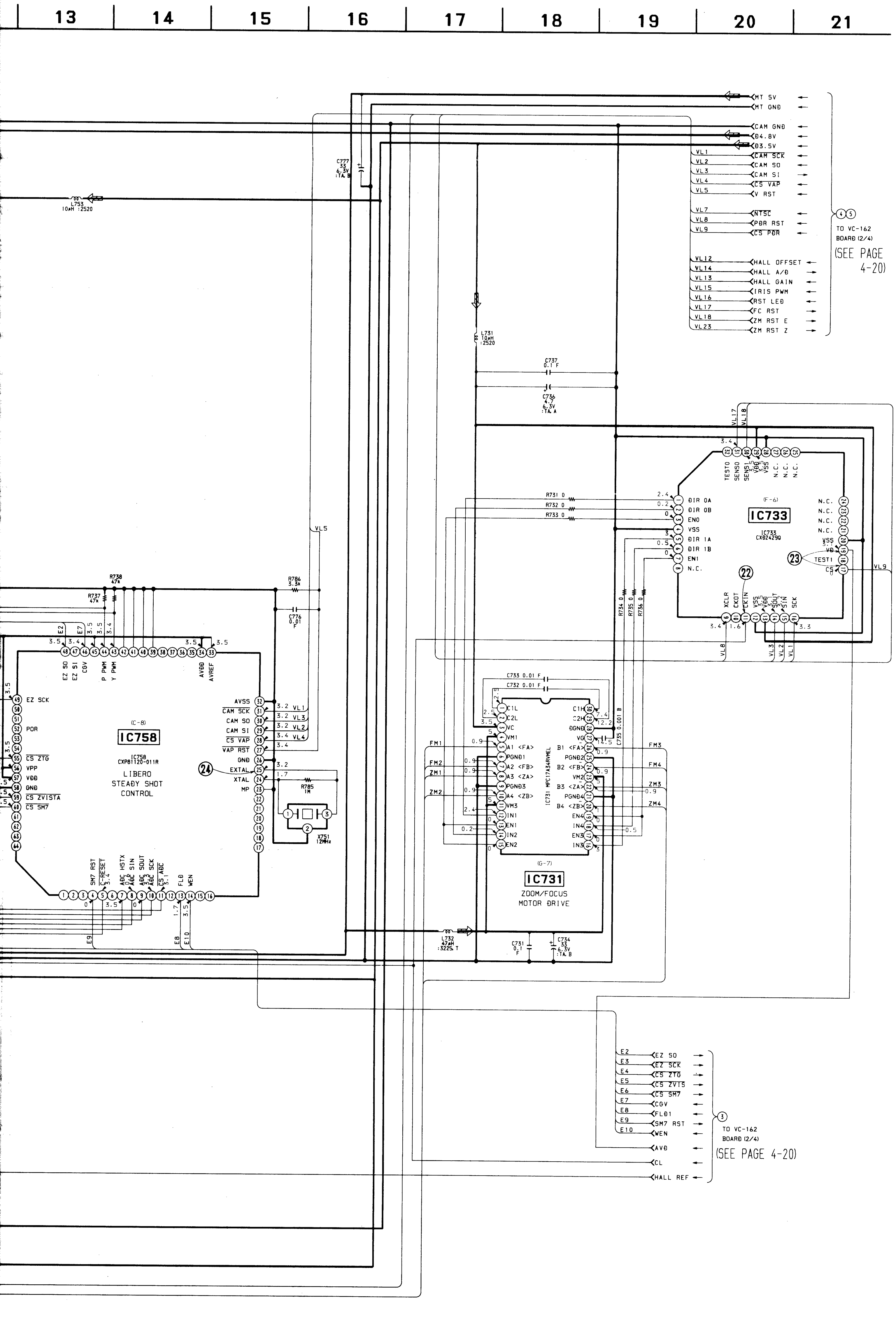
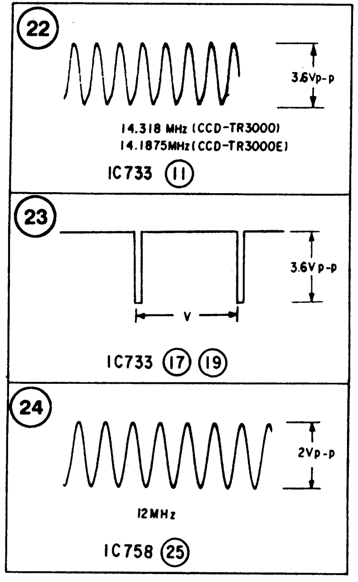
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
K
L
M
VC-162 BOARD (4/4) (LD)
no mark : CAMERA REC mode
* : Can not be measured.
IC757
INVERTER
IC752
Y/P LPF,
Y/P DRIVE
Q751
INVERTER
IC751
BUFFER
IC754
P DRIVE
IC753
Y DRIVE
IC755
A/D CONVERTER
IC372
HALL AMP
IC371
IRIS DIRVE
Q371
SWITCH
Q372
IRIS
DRIVER
Q373
HALL BIAS
CN751 0.5 LIF (C-9)
P DRIV A
P DRIV B
P DUMP A
P DUMP B
D4.8V
Y OUT
GND
TEMP OUT
P OUT
Y DUMP B
Y DUMP A
Y DRIV B
Y DRIV A
ZOOM
LENS
UNIT
• ZOOM LENS UNIT is replaced as a block. So that there SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.
CN372 23P 0.5 ZIF I
BIAS (+)
HALL (+)
BIAS (-)
HALL (-)
CONT (-)
CONT (+)
DRIVE (-)
DRIVE (+)
ZOOM A
ZOOM B
ZOOM B
ZOOM A
FOCUS A
FOCUS B
FOCUS B
FOCUS A
ZM RST Z
SENSE VCC
FOCUS RESET
GND
ZM RST E
TEMP COM
TEMP OUT
TO SE-42 BOARD
CN401
(SEE PAGE 4-12)
YS OUT
GND
GND
D 5V
PS OUT
C RESET
CN371 0.5 LIF (B-9)
EZ SCK
POR
CS ZTG
VPP
VDD
GND
CS ZVIST
CS SM7
VL14
VL12
VL13
VL15
09


13
14
15
16
17
18
19
20
21
MT 5V
MT GND
CAM GND
D4.8V
D3.5V
VL1 CAM SCK
VL2 CAM SO
VL3 CAM SI
VL4 CS VAP
VL5 V RST
VL7 NTSC
VL8 POR RST
VL9 CS POR
VL12 HALL OFFSET
VL14 HALL A/D
VL13 HALL GAIN
VL15 IRIS PWM
VL16 RST LED
VL17 FC RST
VL18 ZM RST E
VL23 ZM RST Z
④⑤
TO VC-162
BOARD (2/4)
(SEE PAGE 4-20)
C777 33 6.3V :TA, B
L753 10µH :2520
L731 10µH :2520
C737 0.1 F
C736 4.7 6.3V :TA, A
R731 0
R732 0
R733 0
R734 0
R735 0
R736 0
R738 47k
R737 47k
R786 3.3k
C776 0.01 F
R785 1M
X751 12MHz
(C-8)
IC758
IC758 CXP81120-011R
LIBERO
STEADY SHOT
CONTROL
EZ SO
EZ SI
CGV
P PWM
Y PWM
AVDD
AVREF
EZ SCK
POR
CS ZTG
VPP
VDD
GND
CS ZVISTA
CS SM7
AVSS
CAM SCK
CAM SO
CAM SI
CS VAP
VAP RST
GND
EXTAL
XTAL
MP
SM7 RST
C-RESET
ADC HSTX
ADC SIN
ADC SOUT
ADC SCK
CS ADC
FLD
WEN
E2
E7
E8
E9
E10
VL1
VL2
VL3
VL4
VL5
㉔
(F-6)
IC733
IC733 CXD2429Q
DIR 0A
DIR 0B
EN0
VSS
DIR 1A
DIR 1B
EN1
N.C.
TEST0
SENS0
SENS1
VDD
VSS
N.C.
TEST1
VD
CS
XCLR
CKOT
CKIN
SOUT
SIN
SCK
VL8
VL9
VL17
VL18
㉒
㉓
(G-7)
IC731
IC731 MPC17A34RVMEL
ZOOM/FOCUS
MOTOR DRIVE
C733 0.01 F
C732 0.01 F
C735 0.001 B
C1L
C2L
VC
VM1
A1 <FA>
PGND1
A2 <FB>
A3 <ZA>
PGND3
A4 <ZB>
VM3
IN1
EN1
IN2
EN2
C1H
C2H
DGND
VG
B1 <FA>
PGND2
B2 <FB>
VM2
B3 <ZA>
PGND4
B4 <ZB>
EN4
IN4
EN3
IN3
FM1
FM2
ZM1
ZM2
FM3
FM4
ZM3
ZM4
L732 47µH :3225, T
C731 0.1 F
C734 33 6.3V :TA, B
E2 EZ SO
E3 EZ SCK
E4 CS ZTG
E5 CS ZVIS
E6 CS SM7
E7 CGV
E8 FLD1
E9 SM7 RST
E10 WEN
AVD
CL
HALL REF
③
TO VC-162
BOARD (2/4)
(SEE PAGE 4-20)

VC-162 BOARD(4/4)



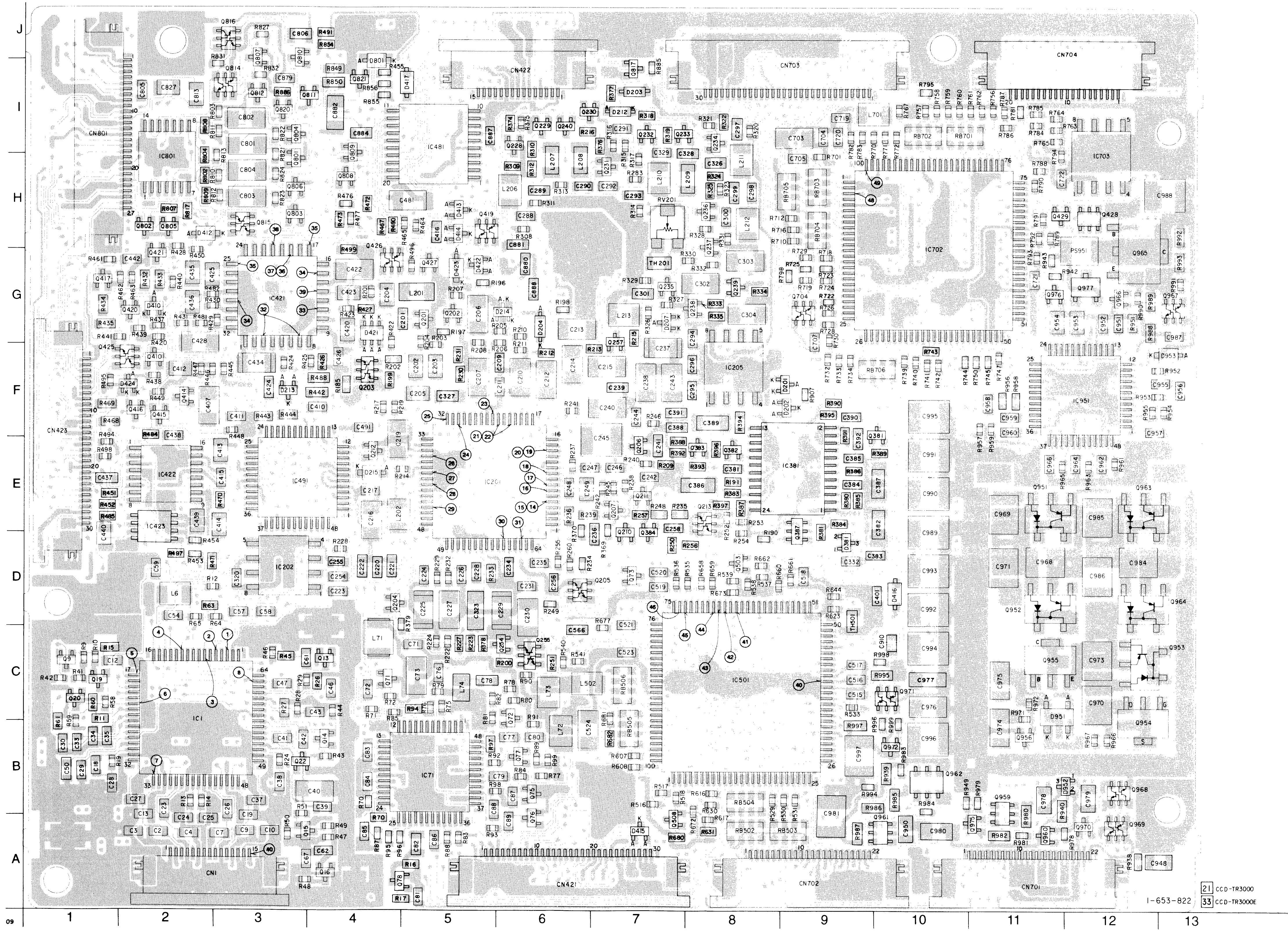
4-29 4-30 4-3

VS-113 (R/P HEAD AMP, Y RF PROCESS, Y/CHROMA PROCESS, VIDEO I/O, SERVO/SYSTEM CONTROL, MODE CONTROL, AUDIO, POWER) PRINTED WIRING BOARD

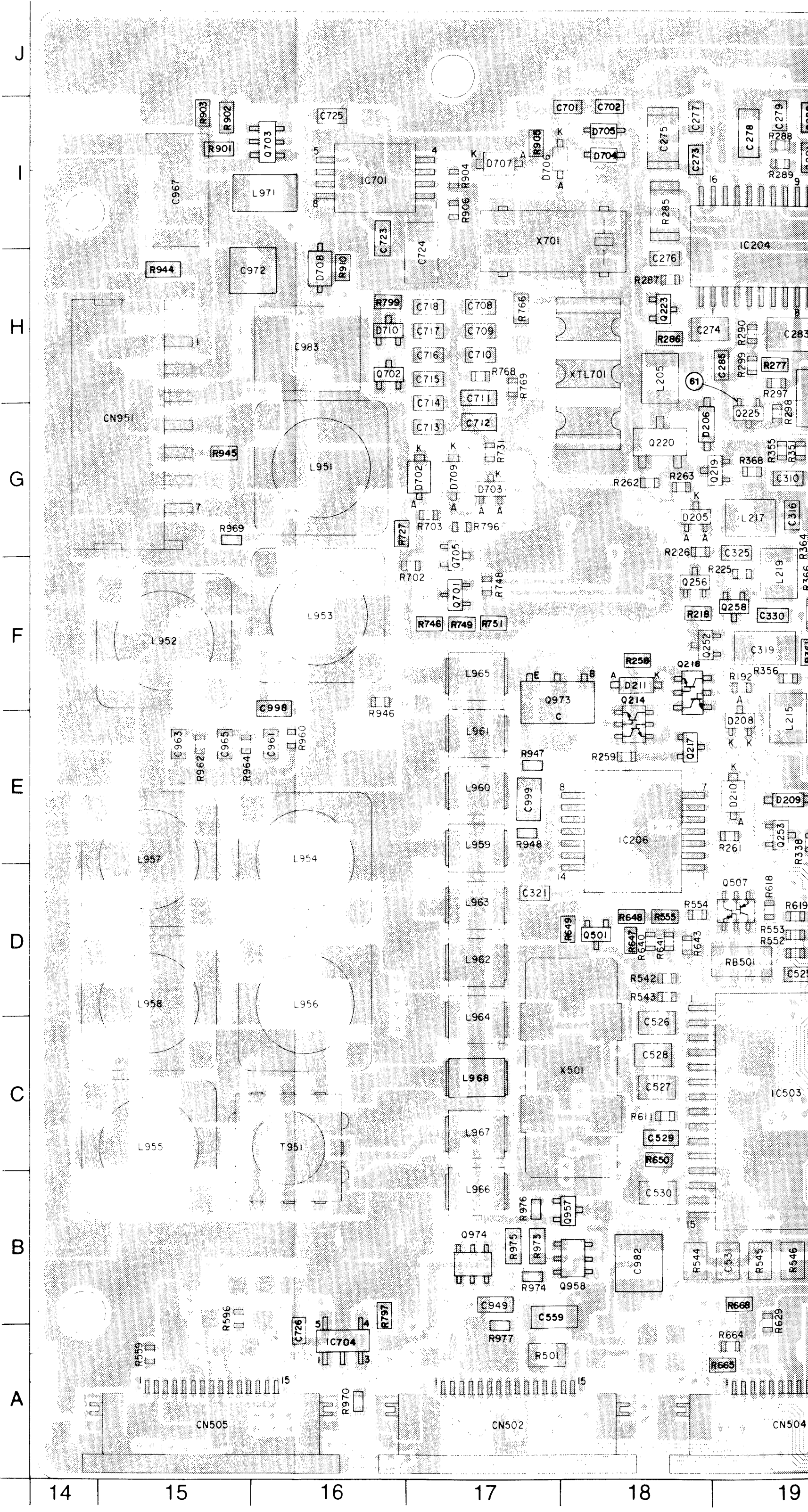
— Ref. No. VS-113 BOARD: 3000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

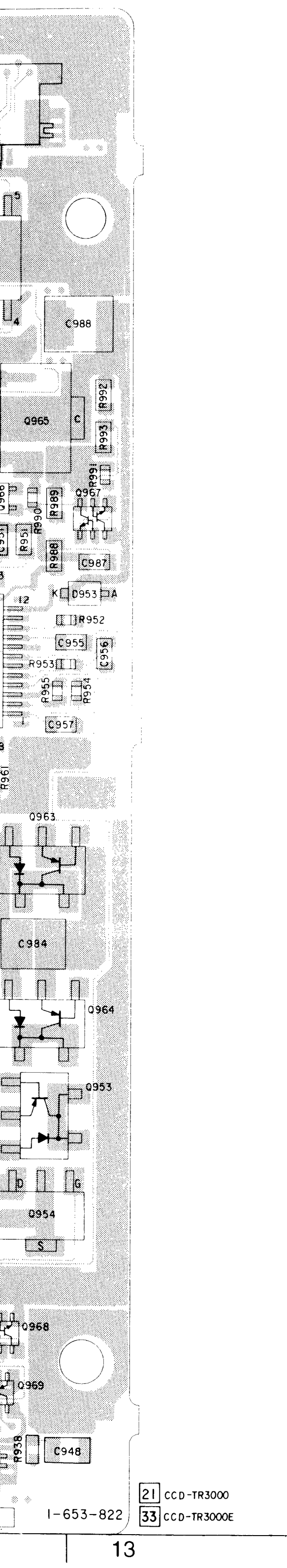
VS-113 BOARD(COMPONENT SIDE)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
09
CN801
CN422
CN703
CN704
CN423
CN1
CN421
CN702
CN701
IC801
IC481
IC703
IC702
IC421
IC205
IC951
IC422
IC491
IC201
IC381
IC423
IC202
IC1
IC501
IC71
21 CCD-TR3000
33 CCD-TR3000E
1-653-822

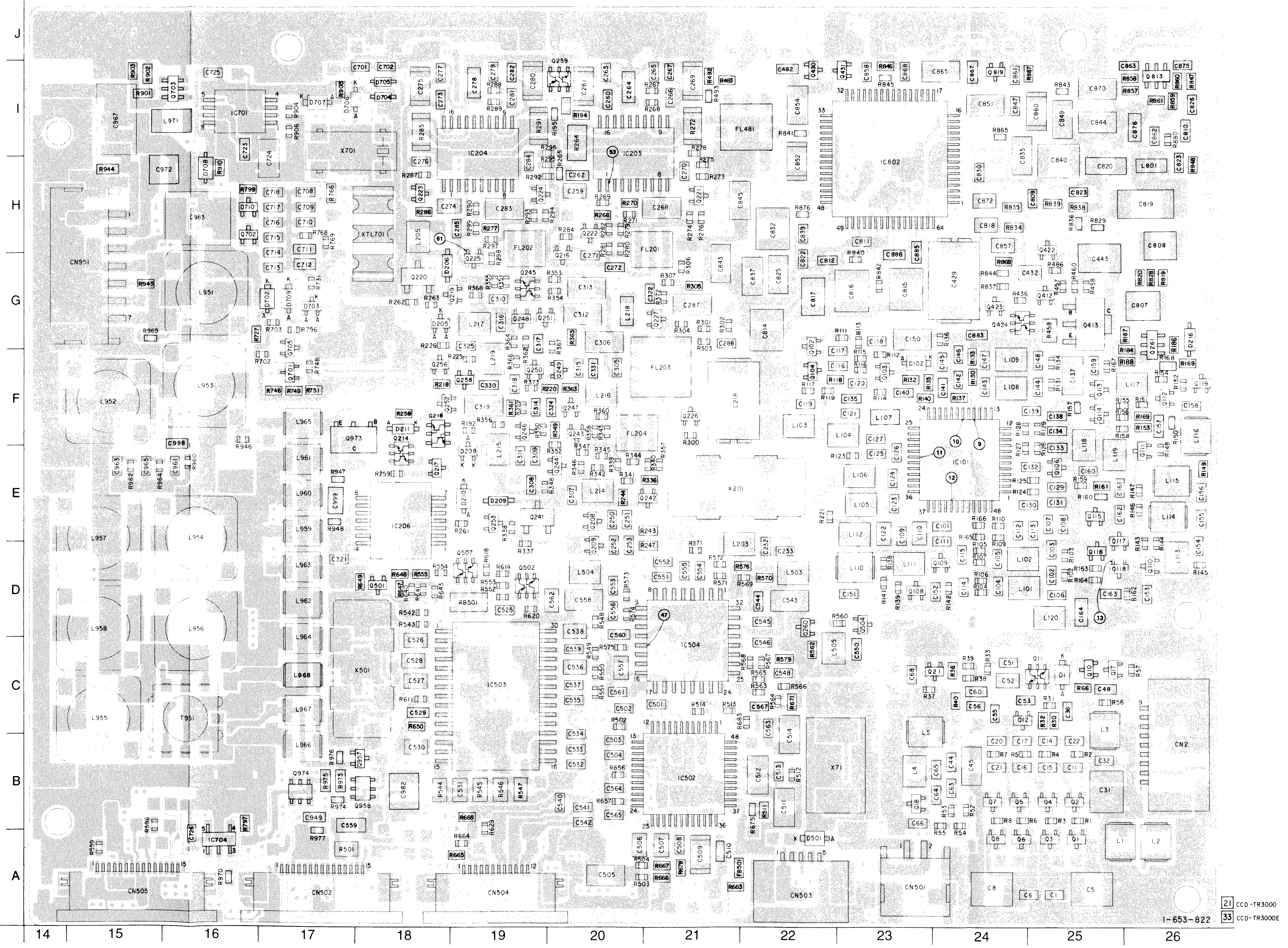
VS-113 BOARD (CONDUCTOR SIDE)


J
I
H
G
F
E
D
C
B
A
14
15
16
17
18
19
IC701
IC204
X701
XTL701
CN951
IC206
X501
IC503
T951
IC704
CN505
CN502
CN504

ING BOARD



VS-113 BOARD (CONDUCTOR SIDE)



VS-113 BOARD

C001	A-25	C140	F-23	C306	G-20	C720	
C002	A-2	C141	F-24	C307	E-20	C724	
C003	A-2	C142	F-24	C309	E-19	C725	
C004	A-2	C143	F-24	C310	G-19	C801	
C005	A-25	C144	F-25	C311	E-19	C802	
C006	A-25	C145	F-24	C312	G-20	C803	
C007	A-3	C146	F-24	C313	G-20	C804	
C008	A-24	C147	F-24	C314	F-19	C807	
C009	A-3	C148	F-25	C315	F-20	C808	
C010	A-3	C150	G-23	C316	G-19	C811	
C011	B-25	C151	D-23	C318	F-19	C813	
C012	C-1	C152	D-24	C319	F-19	C814	
C013	B-2	C153	D-26	C320	D-3	C815	
C014	B-25	C154	D-26	C321	D-17	C816	
C015	B-25	C155	E-26	C323	D-5	C818	
C016	B-24	C156	E-26	C325	G-19	C819	
C017	B-24	C157	F-26	C329	I-7	C820	
C019	B-3	C158	F-26	C331	F-20	C822	
C020	B-24	C159	F-25	C332	D-9	C825	
C021	B-24	C160	E-25	C381	E-8	C827	
C022	B-25	C161	E-25	C382	E-10	C830	
C023	B-2	C162	E-25	C383	D-10	C832	
C024	A-2	C164	D-25	C384	E-9	C835	
C025	A-2	C201	G-5	C385	E-9	C837	
C026	B-3	C202	F-5	C386	E-8	C839	
C027	B-2	C203	F-5	C387	E-10	C840	
C028	B-1	C204	G-4	C388	F-7	C843	
C031	B-25	C205	F-5	C389	F-8	C844	
C032	B-25	C206	G-5	C390	F-9	C845	
C037	B-3	C207	F-5	C391	F-7	C847	
C038	B-3	C210	F-6	C392	F-9	C849	
C039	B-4	C211	F-6	C422	G-4	C851	
C040	B-4	C212	F-6	C428	G-2	C852	
C041	B-3	C213	G-6	C481	H-4	C854	
C042	B-3	C214	F-6	C501	C-21	C857	
C043	C-4	C215	F-7	C502	C-20	C858	
C044	B-24	C216	E-4	C503	B-20	C860	
C045	B-24	C217	E-4	C504	B-20	C861	
C046	C-4	C218	F-21	C505	A-20	C862	
C047	C-3	C219	E-4	C506	A-20	C865	
C048	C-25	C221	D-4	C507	A-21	C868	
C050	B-1	C222	D-4	C508	A-21	C870	
C051	C-24	C223	D-4	C509	A-21	C872	
C052	C-24	C224	D-5	C510	A-21	C882	
C054	D-2	C225	D-5	C511	B-22	C910	
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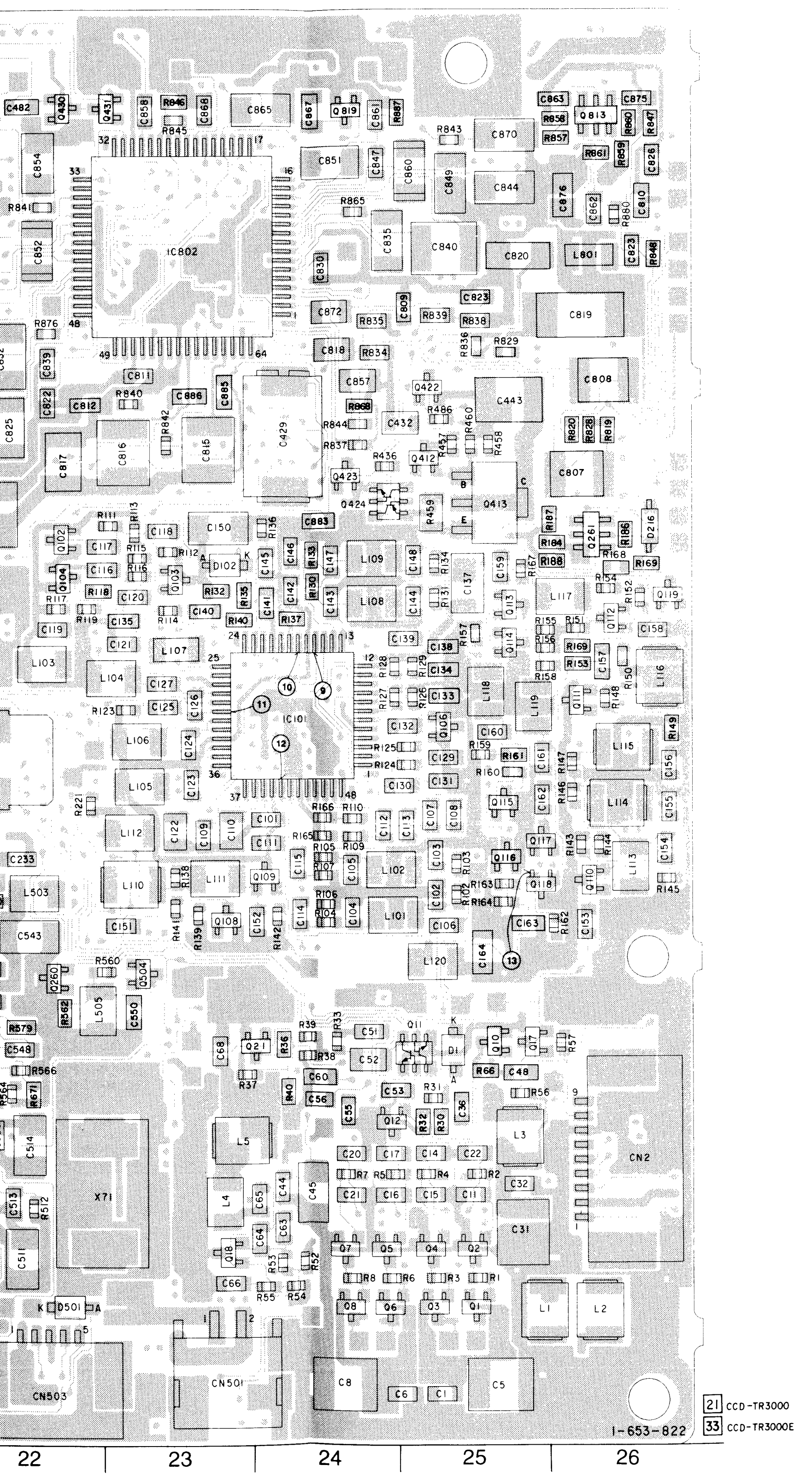

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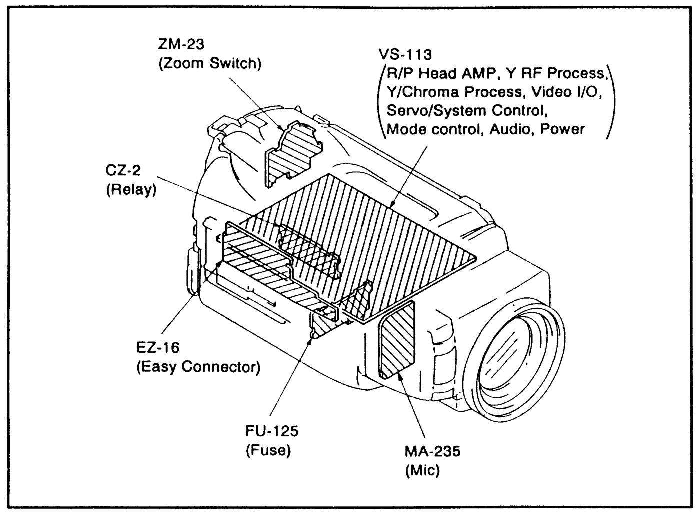
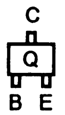
R128	F-24
R129	F-25
R130	F-24
R131	F-25
R133	F-24
R134	F-25
R135	F-23
R136	G-24
R138	D-23
R139	D-23
R140	F-23
R141	D-23
R142	D-24
R143	D-26
R144	D-26
R145	D-26
R146	E-26
R147	E-26
R148	E-26
R150	F-26
R151	F-26
R152	F-26
R154	F-26
R155	F-25
R156	F-25
R157	F-25
R158	F-25
R159	E-25
R160	E-25
R162	D-26
R163	D-25
R164	D-25
R165	E-24
R166	E-24
R167	F-25
R168	F-26
R185	F-4
R190	D-8
R191	E-8
R192	F-19
R193	I-20
R195	I-20
R196	G-5
R197	G-5
R198	G-6
R200	C-6
R201	G-4
R202	F-4
R203	G-5
R204	G-5
R205	G-6
R206	G-6
R207	G-5
R208	G-5
R210	G-6
R211	G-6
R214	E-5
R215	G-7
R216	I-6
R217	F-4
R219	F-4
R221	E-22
R222	C-5
R224	C-5
R225	F-19
R226	G-18
R228	D-4
R229	D-5
R232	D-5
R233	D-5
R234	D-6
R235	E-7
R236	E-6
R237	E-6
R238	E-7
R239	E-6
R240	E-7
R241	F-6
R242	E-7
R243	E-21
R245	E-7
R246	F-7
R247	E-21
R248	E-7
R249	D-6
R251	C-6
R252	E-8
R253	E-8
R254	E-8
R255	D-6
R256	D-8
R257	E-7
R258	F-18
R259	E-18
R260	D-6
R261	E-19
R262	G-18
R263	G-18
R264	I-20
R265	H-20
R266	H-20
R267	I-21
R268	I-21
R269	H-20
R270	H-20
R271	H-20
R272	I-21
R273	H-21
R274	H-21
R275	H-21
R276	H-21
R278	I-21
R279	H-20
R280	H-20
R281	H-20
R282	H-20
R283	H-6
R284	H-20
R285	I-18
R286	H-18
R287	H-18
R288	I-19
R289	I-19
R290	H-19
R291	I-19
R292	H-20
R293	H-19
R294	H-19
R295	H-20
R296	I-20
R297	H-19
R298	G-19
R299	H-19
R300	F-21
R301	G-21
R302	G-21
R303	G-21
R304	G-21
R306	G-21
R307	G-21
R308	H-5
R310	I-6
R311	H-5
R313	H-5
R314	H-6
R315	I-7
R316	I-7
R317	H-6
R320	I-8
R321	I-8
R323	H-8
R326	G-7
R327	G-7
R328	H-8
R329	G-7
R330	G-8
R331	H-8
R332	G-8
R333	G-8
R337	D-19
R338	E-19
R339	E-20
R340	E-21
R341	E-20
R342	E-20
R343	F-20
R344	E-20
R345	E-20
R346	E-20
R347	E-20
R348	E-19
R350	F-19
R351	G-19
R352	E-20
R353	G-20
R354	G-20
R355	G-19
R356	F-19
R357	E-21
R358	F-20
R359	F-19
R360	F-20
R361	F-19
R362	G-19
R364	G-19
R366	F-19
R367	G-20
R368	G-19
R369	E-7
R370	E-6
R371	D-21
R372	G-21
R373	F-19
R374	I-6
R375	I-7
R376	I-7
R377	I-7
R378	C-5
R379	D-5
R380	E-9
R383	E-8
R384	E-9
R385	E-9
R386	E-9
R387	E-8
R389	E-10
R390	F-9
R391	F-9
R392	E-7
R393	E-8
R394	F-8
R395	F-9
R396	E-8
R397	E-8
R420	G-2
R422	G-4
R423	G-4
R424	F-3
R425	F-4
R427	G-4
R428	H-1
R429	G-3
R430	G-2
R431	G-2
R432	G-2
R433	G-2
R434	G-1
R435	G-1
R436	G-24
R437	G-2
R438	F-2
R439	G-2
R440	G-2
R441	G-1
R442	F-4
R443	F-3
R444	F-3
R445	F-3
R446	F-2
R447	F-2
R448	F-3
R449	F-2
R450	H-1
R457	G-25
R458	G-25
R459	G-25
R460	G-25
R461	G-1
R462	G-2
R463	G-2
R464	H-4
R465	H-4
R467	H-4
R468	F-1
R469	F-1
R472	H-4
R473	H-4
R480	H-4
R481	G-2
R482	G-3
R483	I-21
R486	G-25
R488	F-4
R492	I-21
R494	E-1
R495	F-1
R496	G-5
R497	D-2
R498	E-1
R499	G-4
R501	A-17
R502	C-20
R503	A-20
R504	A-20
R512	B-22
R513	C-21
R514	C-21
R516	B-7
R517	B-7
R518	B-7
R529	B-8
R530	B-9
R531	B-9
R533	C-9
R535	D-8
R536	D-7
R537	D-8
R538	D-8
R539	D-8
R540	C-6
R541	C-6
R542	D-18
R543	D-18
R544	B-18
R545	B-19
R546	B-19
R548	D-20
R549	C-20
R550	C-20
R551	C-20
R552	D-19
R553	D-19
R554	D-18
R559	A-15
R560	D-23
R563	C-22
R564	C-22
R565	C-22
R566	C-22
R567	C-22
R568	C-22
R569	D-22
R571	D-21
R572	D-21
R573	D-20
R574	D-20
R575	C-20
R596	B-15
R607	B-7
R608	B-7
R611	C-18
R616	B-8
R617	B-8
R618	D-19
R619	D-19
R620	D-19
R623	D-9
R629	B-19
R630	B-8
R640	D-18
R641	D-18
R643	D-18
R644	D-9
R656	B-20
R657	B-20
R658	D-8
R659	D-8
R660	D-8
R661	D-9
R662	D-8
R664	A-19
R672	B-8
R673	D-8
R675	B-22
R677	D-7
R681	C-7
R683	C-22
R701	H-9
R702	F-17
R703	G-17
R710	H-9
R712	H-9
R716	H-9
R718	G-9
R719	G-9
R722	G-9
R723	G-9
R725	G-9
R726	G-9
R728	G-9
R729	G-9
R730	G-9
R731	G-17
R732	F-9
R733	F-9
R734	F-9
R739	F-10
R740	F-10
R742	F-10
R743	F-10
R744	F-10
R745	F-11
R747	F-11
R748	F-17
R750	F-11
R751	F-17
R756	I-12
R757	I-12
R758	I-12
R759	I-12
R760	I-12
R761	I-12
R762	I-12
R763	I-12
R764	I-12
R765	I-12
R766	H-17
R767	I-12
R768	H-17
R769	H-17
R770	I-12
R771	I-12
R772	I-12
R782	I-9
R783	I-9
R784	I-12
R785	I-12
R786	I-12
R787	I-12
R788	H-11
R789	H-11
R790	H-11
R791	H-11
R792	H-11
R793	G-11
R794	I-13
R796	G-17
R799	H-16
R803	I-3
R807	H-2
R810	H-2
R811	I-3
R812	H-2
R813	I-3
R817	H-2
R819	G-26
R820	G-26
R821	I-3
R822	I-3
R823	H-2
R824	H-2
R827	J-2
R831	I-3
R832	I-3
R834	H-24
R835	H-24
R836	H-25
R837	G-24
R838	H-25
R839	H-25
R840	G-23
R841	I-22
R842	G-23
R843	I-25
R844	G-24
R845	I-23
R849	I-4
R850	I-4
R854	J-4
R855	I-4
R856	I-4
R865	I-24
R876	H-22
R880	I-26
R904	I-17
R906	I-17
R938	A-11
R946	F-16
R951	G-12
R952	F-13
R953	F-13
R954	F-13
R955	F-12
R956	F-11
R957	F-11
R958	F-11
R959	F-11
R960	E-16
R961	E-12
R962	E-15
R963	E-12
R964	E-15
R965	E-12
R966	B-12
R967	B-12
R969	G-15
R971	C-11
R972	C-11
R988	G-12
R989	G-12
R990	G-12
R991	G-13
R992	H-13
R993	G-13
R995	C-10
R996	B-10
R997	B-9
R998	C-10
R999	B-10
RB501	D-19
RB502	A-8
RB503	A-9
RB504	B-8
RB505	B-7
RB506	C-7
RB701	I-12
RB702	I-12
RB703	H-9
RB704	H-9
RB705	H-9
RB706	F-10
RV201	H-6
T951	C-16
X071	B-23
X201	E-21
X501	C-18
X701	I-17
XTL701	H-18


ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process,
Y/Chroma Process, Video I/O,
Servo/System Control,
Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)

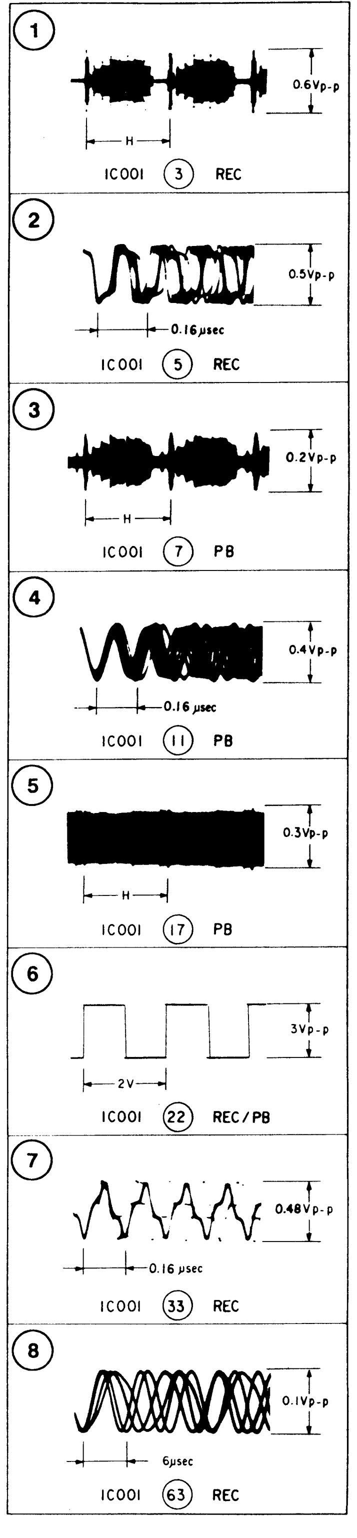
- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- ○ : Through hole is omitted.
- Chip transistor



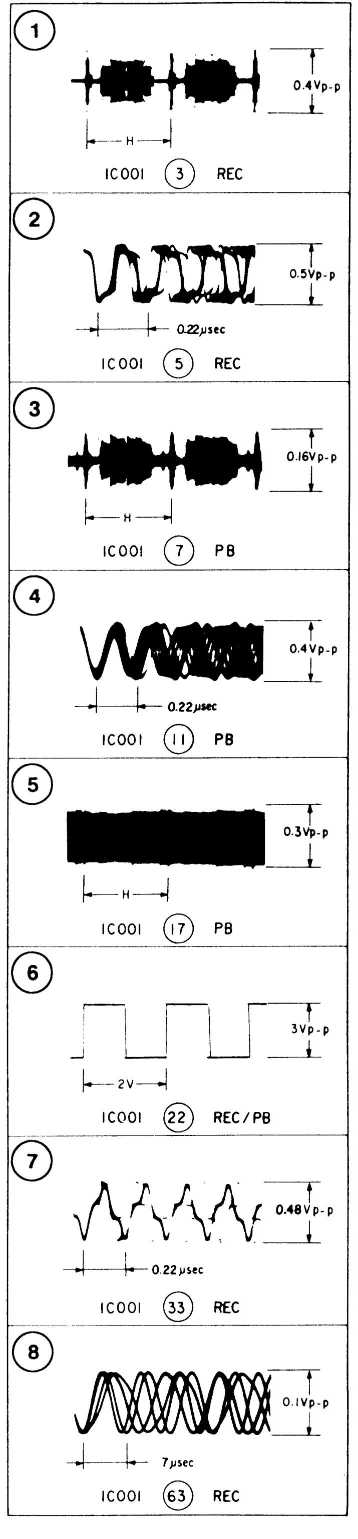
VS-113 (R/P HEAD AMP) SCHEMATIC DIAGRAM

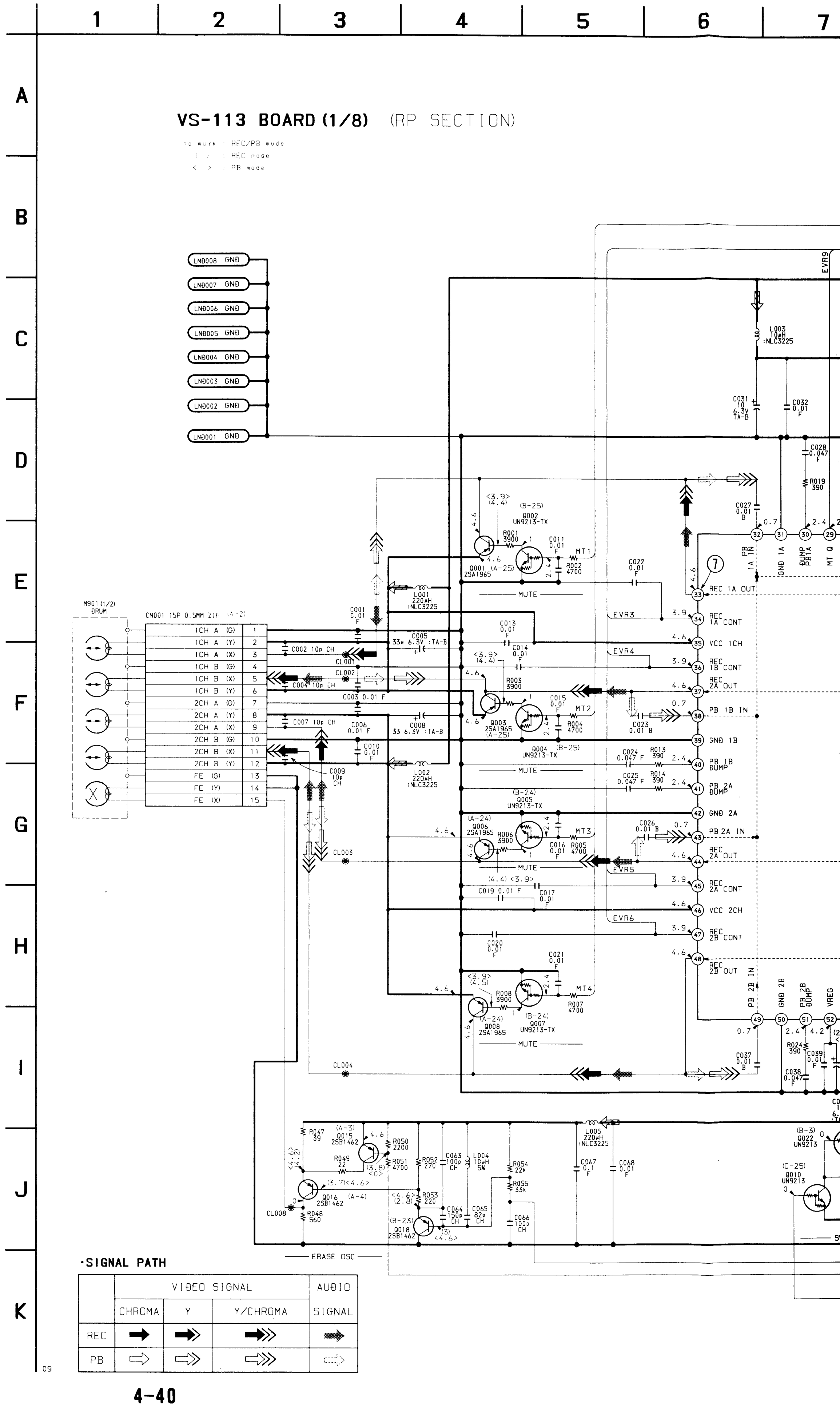
— Ref. No. VS-113 BOARD: 3000 series —

VS-113 BOARD (1/8)(CCD-TR3000) NTSC



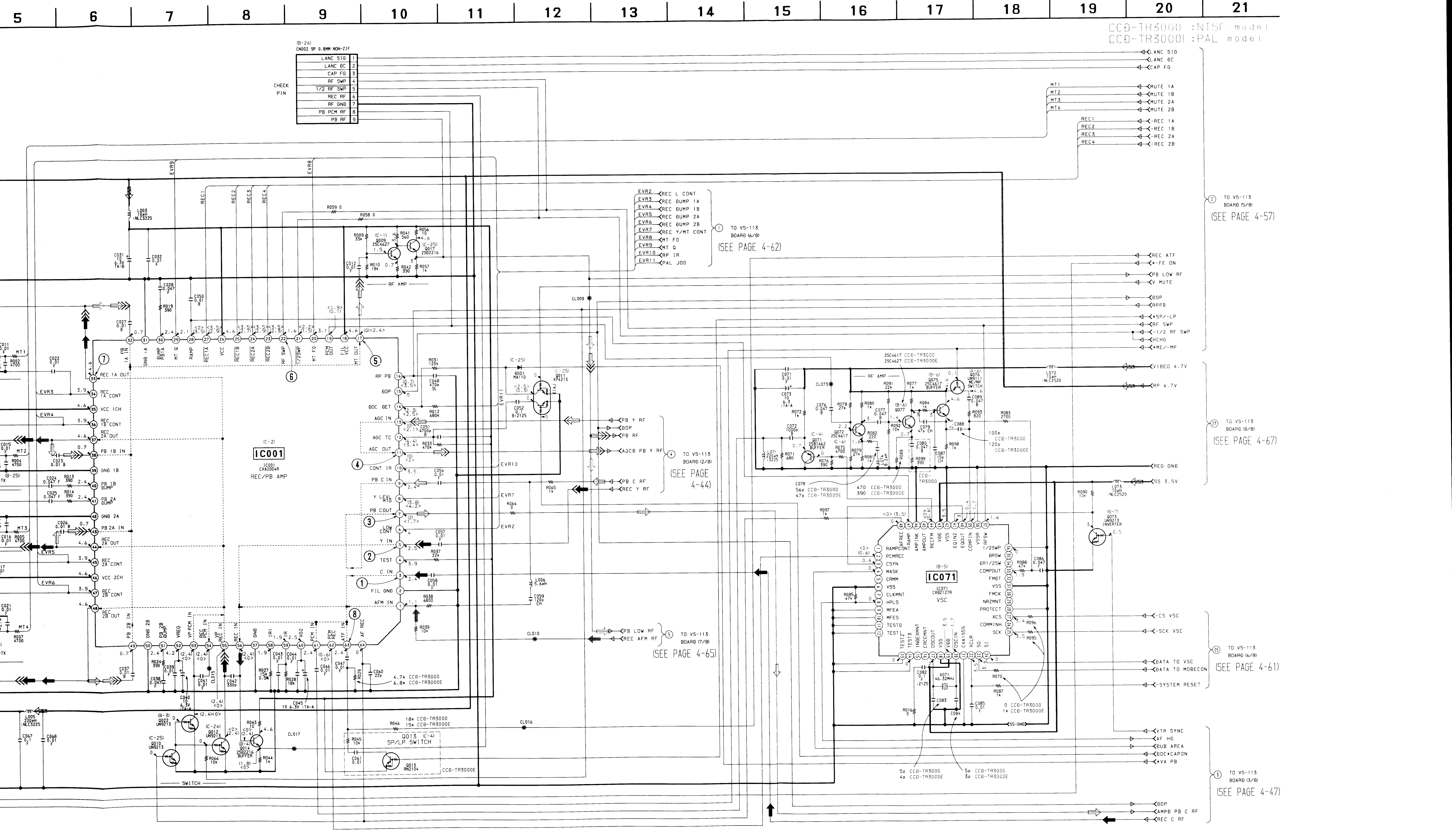
VS-113 BOARD (1/8)(CCD-TR3000E) PAL




1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
K
VS-113 BOARD (1/8) (RP SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
LND008 GND
LND007 GND
LND006 GND
LND005 GND
LND004 GND
LND003 GND
LND002 GND
LND001 GND
M901 (1/2)
DRUM
CN001 15P 0.5MM ZIF
1CH A (G)
1CH A (Y)
1CH A (X)
1CH B (G)
1CH B (X)
1CH B (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
2CH B (G)
2CH B (X)
2CH B (Y)
FE (G)
FE (Y)
FE (X)
Q001 2SA1965
Q002 UN9213-TX
Q003 2SA1965
Q004 UN9213-TX
Q005 UN9213-TX
Q006 2SA1965
Q007 UN9213-TX
Q008 2SA1965
Q015 2SB1462
Q016 2SB1462
Q018 2SB1462
Q010 UN9213
Q022 UN9213
MT1
MT2
MT3
MT4
MUTE
L001 220μH NLC3225
L002 220μH NLC3225
L003 10μH NLC3225
L005 220μH NLC3225
CL001
CL002
CL003
CL004
CL008
EVR3
EVR4
EVR5
EVR6
REC 1A OUT
REC 1A CONT
VCC 1CH
REC 1B CONT
REC 2A OUT
PB 1B IN
GND 1B
PB 1B DUMP
PB 2A DUMP
GND 2A
PB 2A IN
REC 2A OUT
REC 2A CONT
VCC 2CH
REC 2B CONT
REC 2B OUT
PB 2B IN
GND 2B
PB 2B DUMP
VREG
GND 1A
PB 1A
ERASE OSC
09

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡≫	➡≫	➡
PB	⇨	⇨≫	⇨≫	⇨

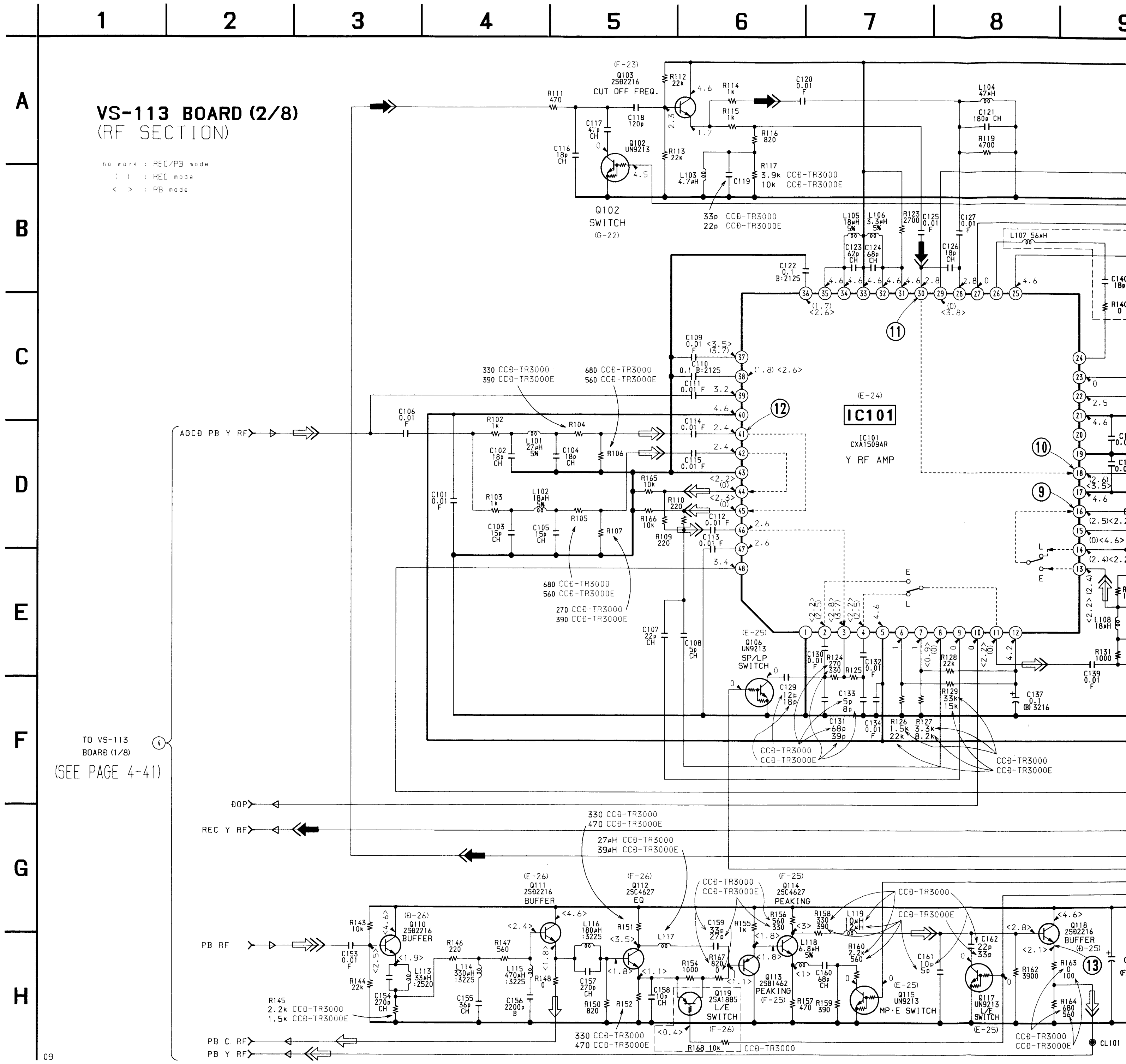

5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
CCD-TR3000 :NTSC model
CCD-TR3000E :PAL model
(B-26)
CN002 9P 0.8MM NON-ZIF
LANC SIG
LANC DC
CAP FG
RF SWP
1/2 RF SWP
REC RF
RF GND
PB PCM RF
PB RF
CHECK PIN
(C-2)
IC001
CXA2004R
REC/PB AMP
(B-5)
IC071
CXD2127R
VSC
RF AMP
SWITCH
Q013 (C-4)
SP/LP SWITCH
CCD-TR3000E
BUFFER
TO VS-113 BOARD (5/8)
(SEE PAGE 4-57)
TO VS-113 BOARD (6/8)
(SEE PAGE 4-62)
TO VS-113 BOARD (2/8)
(SEE PAGE 4-44)
TO VS-113 BOARD (7/8)
(SEE PAGE 4-65)
TO VS-113 BOARD (8/8)
(SEE PAGE 4-67)
TO VS-113 BOARD (6/8)
(SEE PAGE 4-61)
TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
MUTE 1A
MUTE 1B
MUTE 2A
MUTE 2B
-REC 1A
-REC 1B
-REC 2A
-REC 2B
REC L CONT
REC DUMP 1A
REC DUMP 1B
REC DUMP 2A
REC DUMP 2B
REC Y/MT CONT
MT FO
MT Q
RP IR
PAL JOG
REC ATF
*-FE ON
PB LOW RF
V MUTE
DOP
RPPB
*SP/-LP
RF SWP
-1/2 RF SWP
HCHG
*ME/-MP
VIDEO 4.7V
RP 4.7V
REG GND
SS 3.5V
PB Y RF
AGCD PB Y RF
PB C RF
REC Y RF
REC AFM RF
-CS VSC
-SCK VSC
DATA TO VSC
DATA TO MOBECON
-SYSTEM RESET
VTR SYNC
AF HD
DUB AREA
DDC*CAPON
*VA PB
AMPD PB C RF
REC C RF

VIDEO
VS-113 (1/8)

VS-113 (Y RF PROCESS) SCHEMATIC DIAGRAM

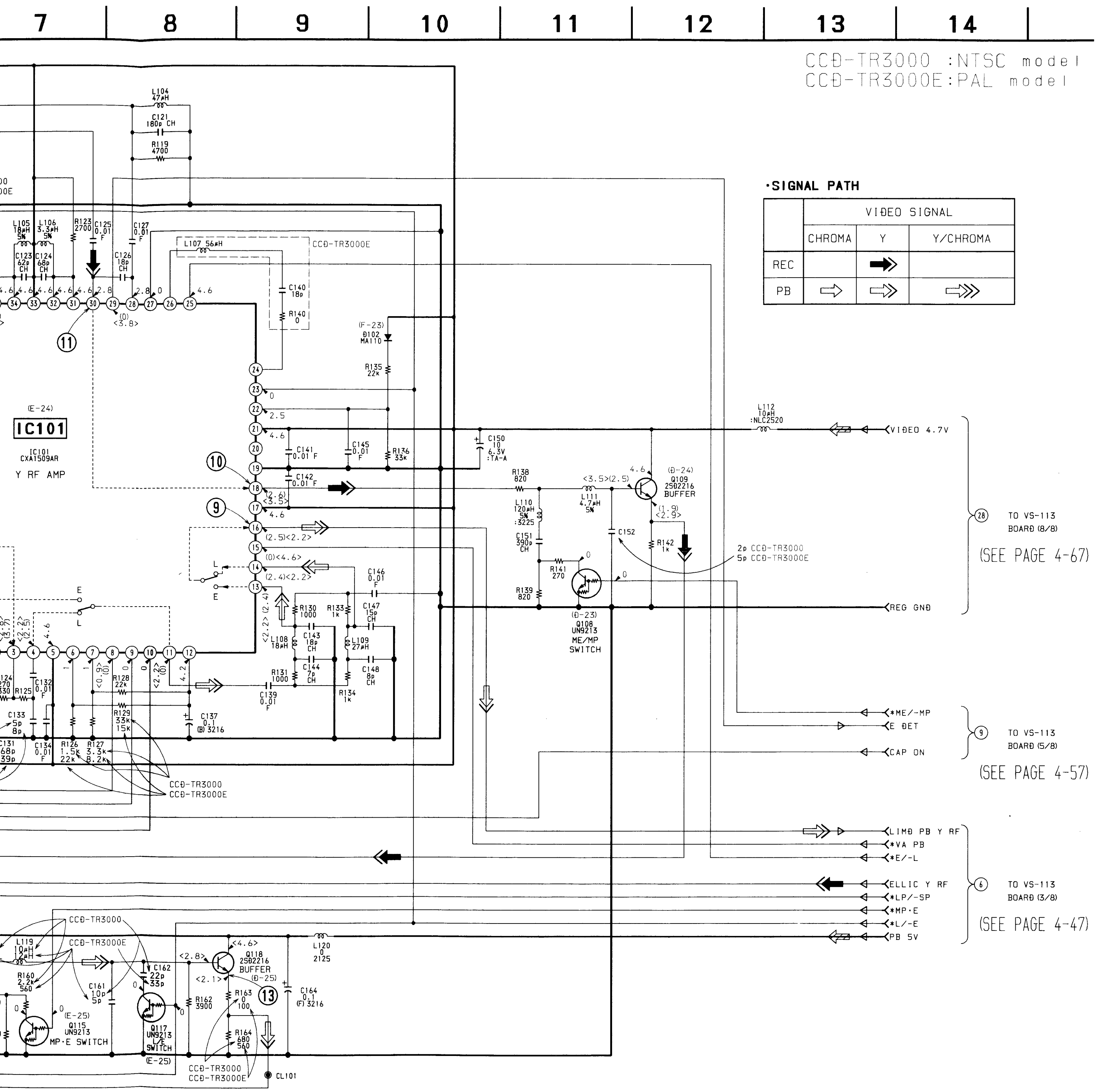
— Ref. No. VS-113 BOARD: 3000 series —

• Refer to page 4–34 for Printed Wiring Board.


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
VS-113 BOARD (2/8)
(RF SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q103 2SD2216 CUT OFF FREQ.
Q102 UN9213
Q102 SWITCH
IC101 CXA1509AR Y RF AMP
Q106 UN9213 SP/LP SWITCH
AGCD PB Y RF
TO VS-113 BOARD (1/8)
(SEE PAGE 4-41)
GDP
REC Y RF
PB RF
PB C RF
PB Y RF
Q110 2SD2216 BUFFER
Q111 2SD2216 BUFFER
Q112 2SC4627 EQ
Q113 2SB1462 PEAKING
Q114 2SC4627 PEAKING
Q119 2SA1885 L/E SWITCH
Q115 UN9213 MP·E SWITCH
Q117 UN9213 L/E SWITCH
Q118 2SD2216 BUFFER
CCD-TR3000
CCD-TR3000E
CL101
09

4 - 43

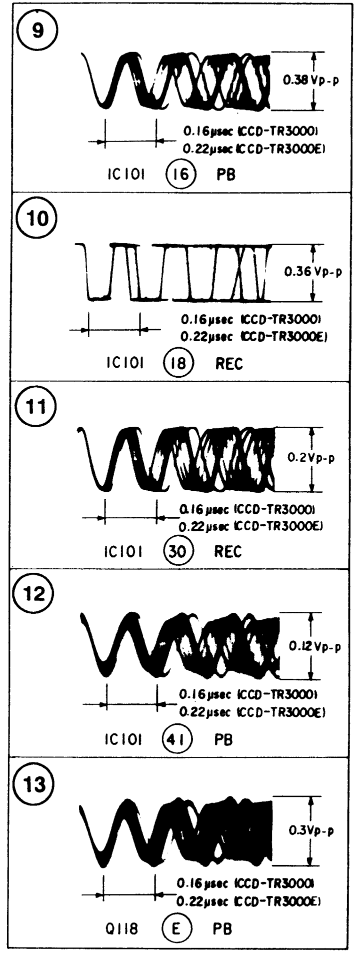
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model


7
8
9
10
11
12
13
14
IC101
CXA1509AR
Y RF AMP
L104 47μH
C121 180p CH
R119 4700
L107 56μH
CCD-TR3000E
C140 18p
R140 0
D102 MA110
R135 22k
C141 0.01 F
C142 0.01 F
C145 0.01 F
R136 33k
C150 10 6.3V :TA-A
R138 820
L110 120μH
C151 390p CH
L111 4.7μH
Q109 2SD2216 BUFFER
C152
R142 1k
R141 270
R139 820
Q108 UN9213 ME/MP SWITCH
L112 10μH :NLC2520
VIDEO 4.7V
REG GND
28 TO VS-113 BOARD (8/8)
(SEE PAGE 4-67)
2p CCD-TR3000
5p CCD-TR3000E
C146 0.01 F
C147 15p CH
R130 1000
R133 1k
L108 18μH
C143 18p CH
L109 27μH
C144 7p CH
C148 8p CH
R131 1000
C139 0.01 F
R134 1k
C137 0.1 (B)3216
*ME/-MP
E DET
CAP ON
9 TO VS-113 BOARD (5/8)
(SEE PAGE 4-57)
LIMB PB Y RF
*VA PB
*E/-L
ELLIC Y RF
*LP/-SP
*MP-E
*L/-E
PB 5V
6 TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
Q118 2SD2216 BUFFER
R162 3900
R163 100
R164 680 560
C164 0.1 (F)3216
L120 0 2125
CL101
Q117 UN9213 L/E SWITCH
Q115 UN9213 MP-E SWITCH
C161 10p 5p
C162 22p 33p
L119
R160
CCD-TR3000
CCD-TR3000E

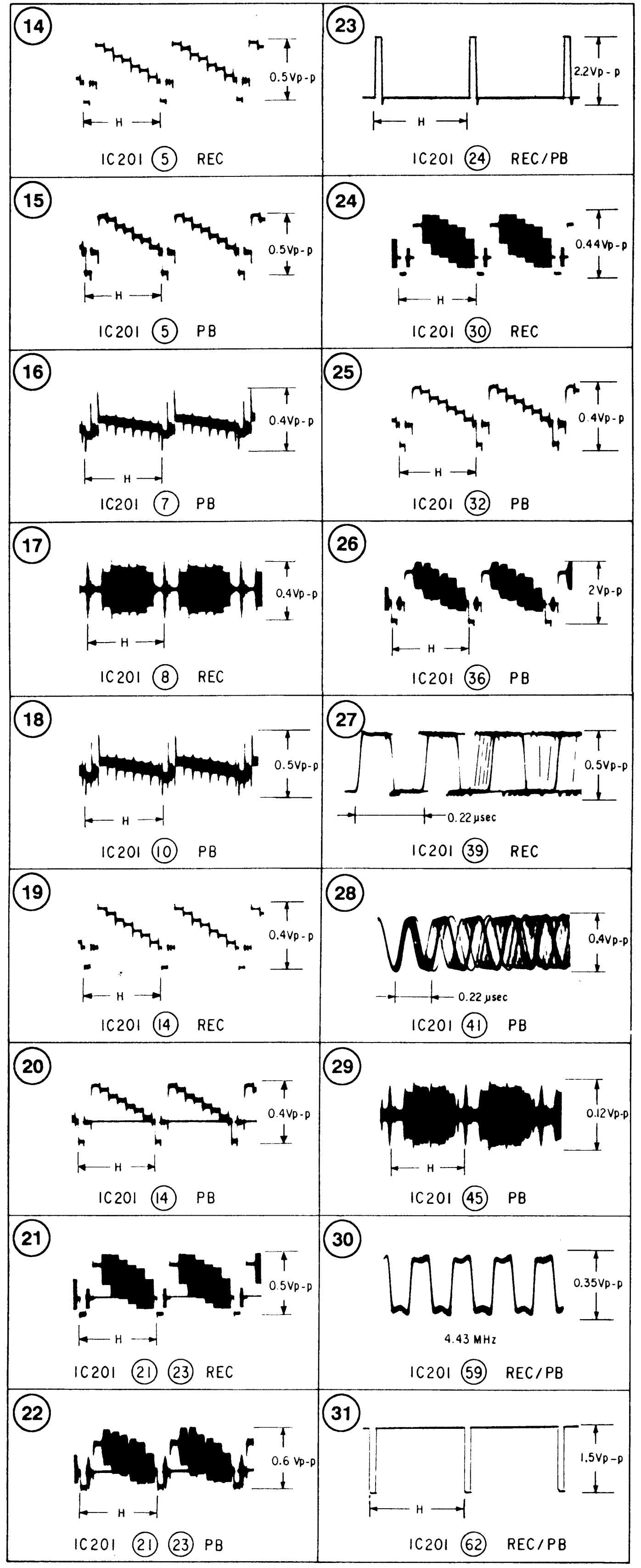
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB	⇨	⇨	⇨

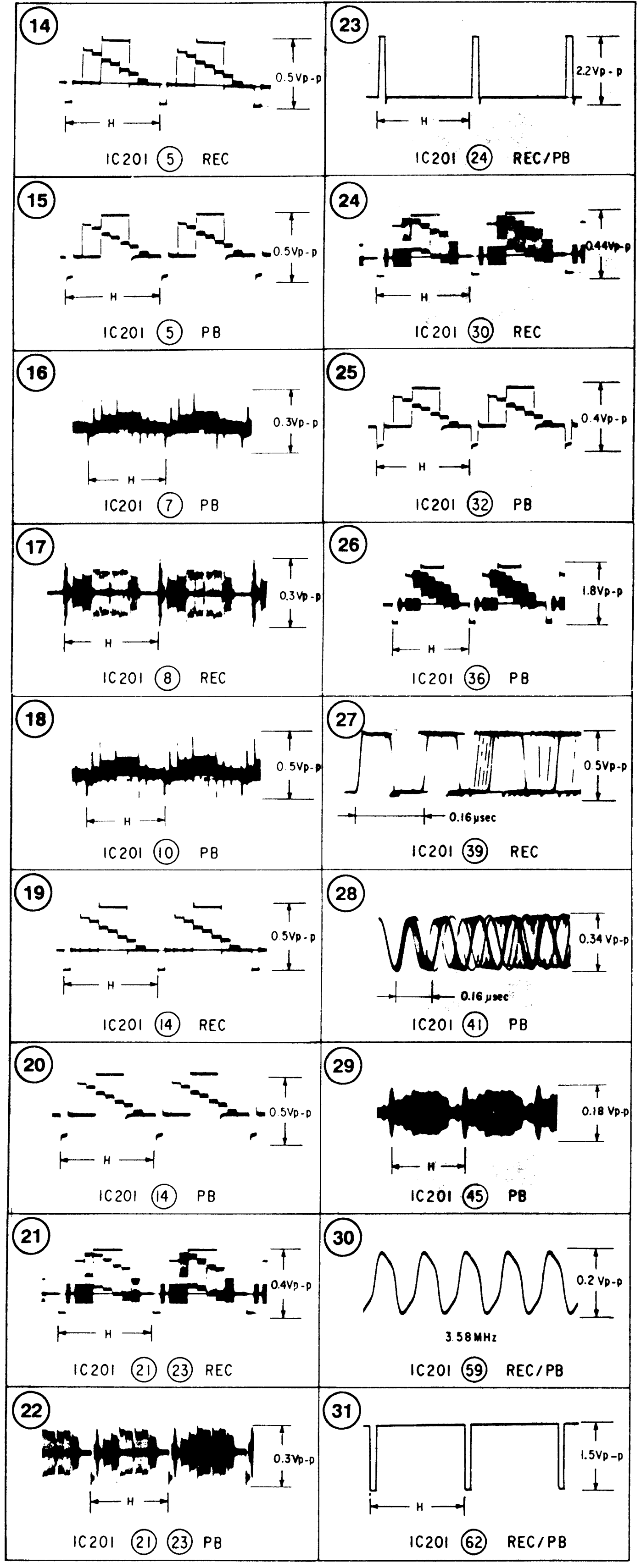
VS-113 BOARD (2/8)



VS-113 BOARD (3/8) (CCD-TR3000E) PAL



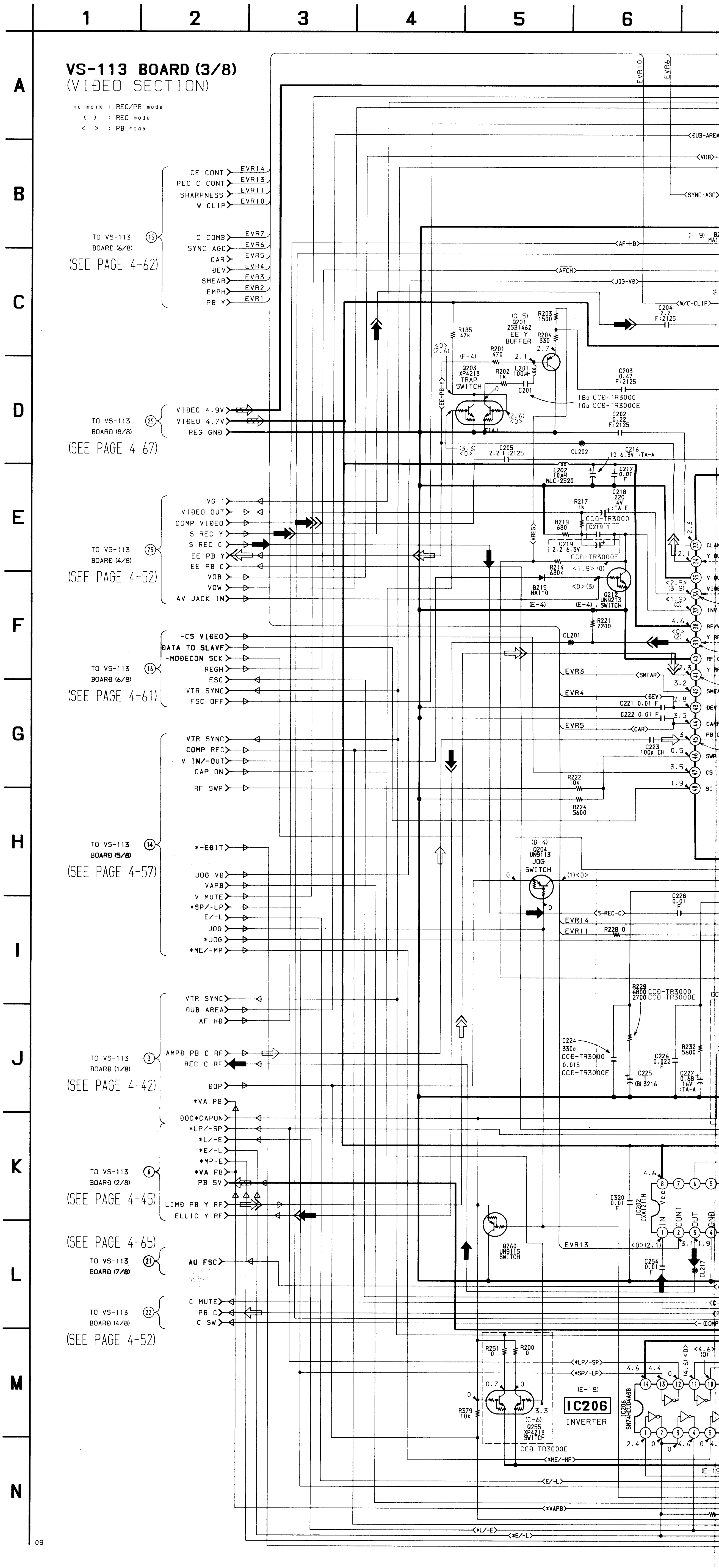
VS-113 BOARD (3/8)(CCD-TR3000) NTSC



VS-113 (Y/CHROMA PROCESS) SCHEMATIC DIAGRAM

— Ref. No. VS-113 BOARD: 3000 series —

• Refer to page 4–34 for Printed Wiring Board.


1
2
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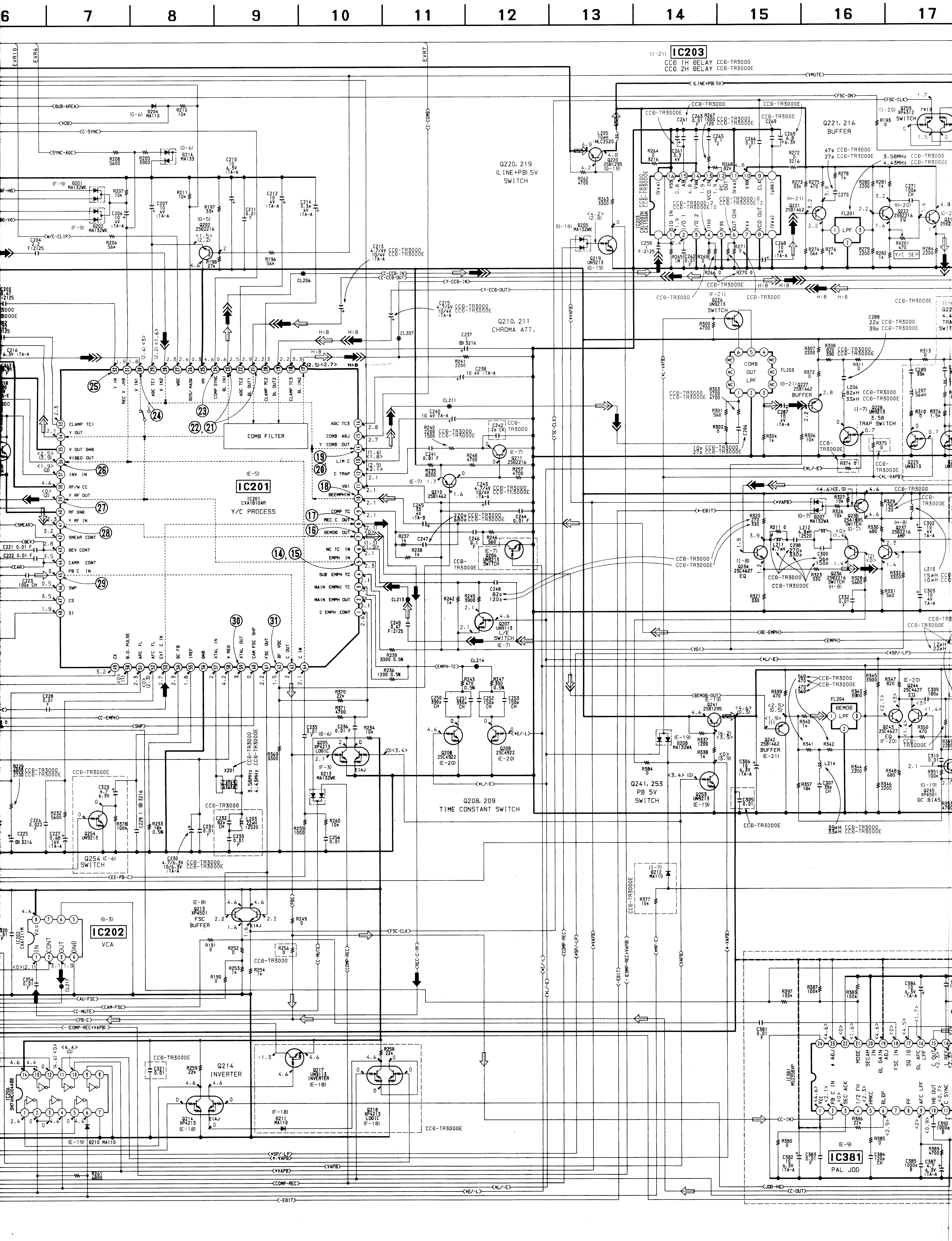
4
5
6
A
B
C
D
E
F
G
H
I
J
K
L
M
N
VS-113 BOARD (3/8)
(VIDEO SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
TO VS-113 BOARD (6/8) ⑮ (SEE PAGE 4-62)
CE CONT EVR14
REC C CONT EVR13
SHARPNESS EVR11
W CLIP EVR10
C COMB EVR7
SYNC AGC EVR6
CAR EVR5
DEV EVR4
SMEAR EVR3
EMPH EVR2
PB Y EVR1
TO VS-113 BOARD (8/8) ㉙ (SEE PAGE 4-67)
VIDEO 4.9V
VIDEO 4.7V
REG GND
TO VS-113 BOARD (4/8) ㉓ (SEE PAGE 4-52)
VG 1
VIDEO OUT
COMP VIDEO
S REC Y
S REC C
EE PB Y
EE PB C
VOB
VOW
AV JACK IN
TO VS-113 BOARD (6/8) ⑯ (SEE PAGE 4-61)
-CS VIDEO
DATA TO SLAVE
-MODECON SCK
REGH
FSC
VTR SYNC
FSC OFF
TO VS-113 BOARD (5/8) ⑭ (SEE PAGE 4-57)
VTR SYNC
COMP REC
V IN/-OUT
CAP ON
RF SWP
*-EDIT
JOG VD
VAPB
V MUTE
*SP/-LP
E/-L
JOG
*JOG
*ME/-MP
TO VS-113 BOARD (1/8) ③ (SEE PAGE 4-42)
VTR SYNC
DUB AREA
AF HD
AMPD PB C RF
REC C RF
DOP
*VA PB
TO VS-113 BOARD (2/8) ⑥ (SEE PAGE 4-45)
DOC*CAPON
*LP/-SP
*L/-E
*E/-L
*MP-E
*VA PB
PB 5V
LIMD PB Y RF
ELLIC Y RF
(SEE PAGE 4-65)
TO VS-113 BOARD (7/8) ㉑
AU FSC
TO VS-113 BOARD (4/8) ㉒ (SEE PAGE 4-52)
C MUTE
PB C
C SW
Q201 2SB1462 EE Y BUFFER
Q203 XP4213 TRAP SWITCH
R185 47k
R201 470
R202 1k
R203 1500
R204 330
L201 100μH
C201
C202 0.22 F:2125
C203 0.47 F:2125
C204 2.2 F:2125
C205 2.2 F:2125
18p CCD-TR3000
10p CCD-TR3000E
CL202
L202 10μH NLC:2520
C216 10 6.3V :TA-A
C217 0.01 F
C218 220 4V :TA-E
R217 1k
R219 680
C219 2.2 6.3V
R214 680k
R215 MA110
Q212 UN9213 SWITCH
R221 2200
CL201
EVR3
EVR4
EVR5
C221 0.01 F
C222 0.01 F
C223 100p CH
R222 10k
R224 5600
Q204 UN9113 JOG SWITCH
EVR14
EVR11
R228 0
C228 0.01
R229 6800 CCD-TR3000
2700 CCD-TR3000E
C224 330p CCD-TR3000
0.015 CCD-TR3000E
C225 10 3216
C226 0.022 F
R232 5600
C227 0.68 16V :TA-A
Q260 UN9115 SWITCH
EVR13
C320 0.01 F
IC207 CXA1271M
C254 0.01 F
R251 0
R200 0
R379 10k
Q255 XP4213 SWITCH
CCD-TR3000E
IC206 INVERTER
IC206 SN74HC04ADB
<AF-HD>
<AFCH>
<JOG-VD>
<W/C-CLIP>
<DUB-AREA>
<VOB>
<SYNC-AGC>
<SMEAR>
<DEV>
<CAR>
<S-REC-C>
<*LP/-SP>
<*SP/-LP>
<*ME/-MP>
<E/-L>
<*VAPB>
<*L/-E>
<*E/-L>
09

oard.


6
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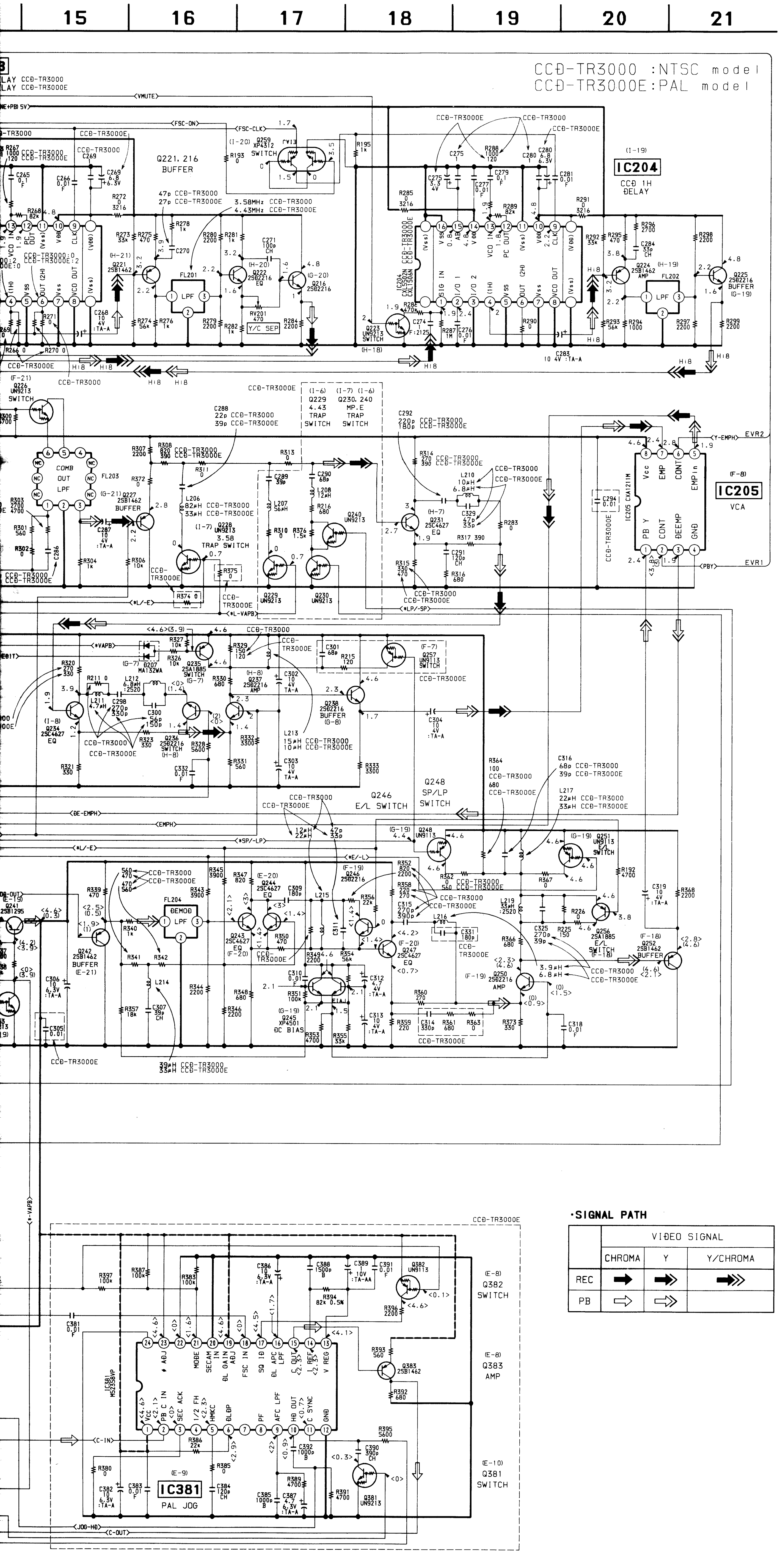
16
17
IC203
CCD 1H DELAY CCD-TR3000
CCD 2H DELAY CCD-TR3000E
Q220, 219 (LINE+PB) 5V SWITCH
Q221, 216 BUFFER
Q210, 211 CHROMA ATT.
Q226 UN9213 SWITCH
COMB OUT LPF
Q227 2SB1462 BUFFER
3.58 TRAP SWITCH
COMB FILTER
IC201 CXA1810AR
Y/C PROCESS
Q206 UN9213 L/E SWITCH
Q207 UN9113 L/E SWITCH
Q208, 209 TIME CONSTANT SWITCH
Q241, 253 PB 5V SWITCH
Q205 XP4213 LOGIC
Q213 XP4501 FSC BUFFER
Q254 SWITCH
IC202 CXA1121M VCA
Q214 INVERTER
Q217 UN9113 INVERTER
Q218 XP4213 LOGIC
IC206 SN74HCU04ABB
IC381 M52356VP
PAL JOG
FL204 DEMOD LPF
Q242 2SB1462 BUFFER
Q243 2SC4627 EQ
Q244 2SC4627 EQ
Q234 2SC4627 EQ
Q237 2SB2216 AMP
Q235 2SA1885 SWITCH
Q245 XP4501 DC BIAS
X201 3.58MHz CCD-TR3000 4.43MHz CCD-TR3000E


15
16
17
18
19
20
21
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
IC204
CCD 1H DELAY
Q221, 216 BUFFER
Q222 2SD2216 EQ
Q216 2SD2216
Q223 UN9213 SWITCH
Q224 2SB1462 AMP
Q225 2SD2216 BUFFER
FL201 LPF
FL202 LPF
RV201 Y/C SEP
3.58MHz CCD-TR3000
4.43MHz CCD-TR3000E
Q259 XP4312 SWITCH
Q226 UN9213 SWITCH
COMB OUT LPF
FL203
Q227 2SB1462 BUFFER
Q228 UN9213 3.58 TRAP SWITCH
Q229 4.43 TRAP SWITCH
Q230, 240 MP.E TRAP SWITCH
Q231 2SC4627 EQ
IC205 VCA
IC205 CXA1211M
Vcc
EMP
CONT
EMPin
PB Y
CONT
DEEMP
GND
Q234 2SC4627 EQ
Q235 2SA1885 SWITCH
Q236 2SD2216 SWITCH
Q237 2SD2216 AMP
Q238 2SD2216 BUFFER
Q257 UN9113 SWITCH
Q246 E/L SWITCH
Q248 SP/LP SWITCH
Q241 2SB1295
Q242 2SB1462 BUFFER
FL204 DEMOD LPF
Q243 2SC4627 EQ
Q244 2SC4627 EQ
Q245 XP4501 DC BIAS
Q247 2SC4627 EQ
Q250 2SD2216 AMP
Q251 UN9113 E/L SWITCH
Q256 2SA1885 E/L SWITCH
Q252 2SB1462 BUFFER
IC381 M52358FP
IC381 PAL JOG
Q382 SWITCH
Q383 AMP
Q381 SWITCH
Q382 UN9113
Q383 2SB1462
Q381 UN9213
<VMUTE>
<FSC-ON>
<FSC-CLK>
<Y-EMPH>
EVR2
<PBY>
EVR1
<L-VAPB>
<LP/-SP>
<DE-EMPH>
<EMPH>
<SP/-LP>
<E/-L>
<C-IN>
<JOG-H6>
<C-OUT>
<+-VAPB>

·SIGNAL PATH

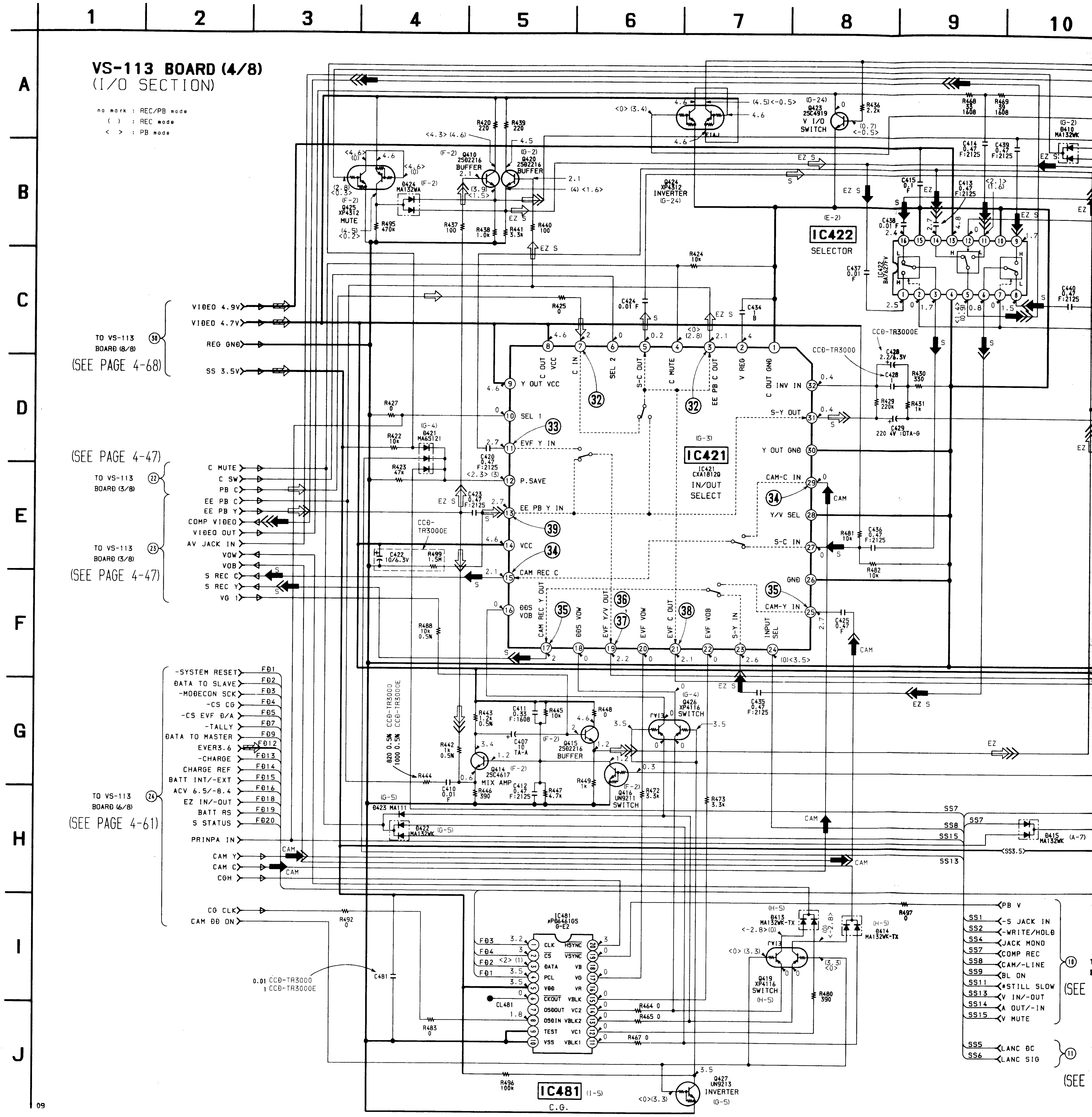
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	

4-51

VS-113 (VIDEO I/O) SCHEMATIC DIAGRAM

— Ref. No. VS-113 BOARD: 3000 series —

- Refer to page 4-34 for Printed Wiring Board.


1
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9
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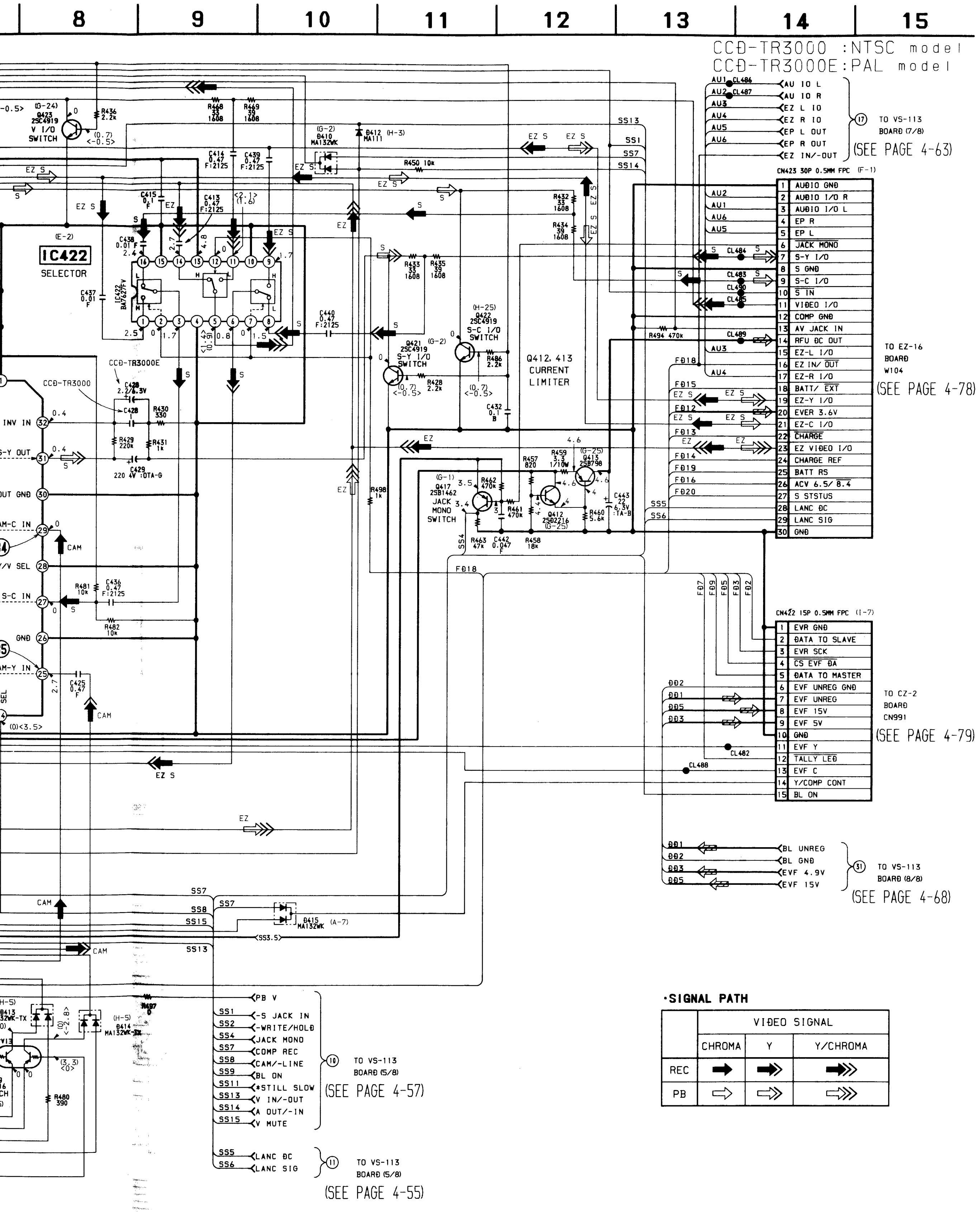
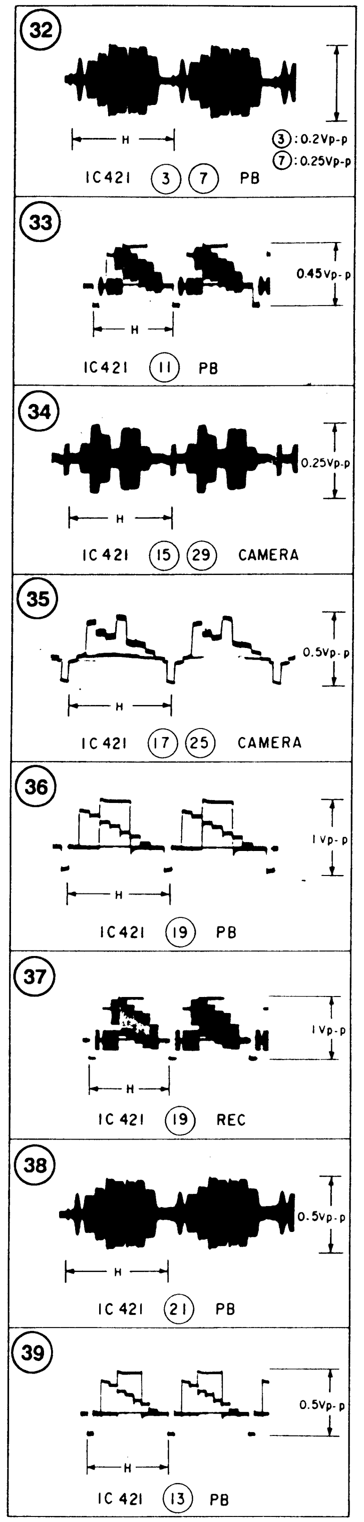
A
B
C
D
E
F
G
H
I
J
VS-113 BOARD (4/8)
(I/O SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
TO VS-113 BOARD (8/8)
(SEE PAGE 4-68)
VIDEO 4.9V
VIDEO 4.7V
REG GND
SS 3.5V
(SEE PAGE 4-47)
TO VS-113 BOARD (3/8)
C MUTE
C SW
PB C
EE PB C
EE PB Y
COMP VIDEO
VIDEO OUT
AV JACK IN
VOW
VOB
S REC C
S REC Y
VG I
TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
-SYSTEM RESET
DATA TO SLAVE
-MODECON SCK
-CS CG
-CS EVF D/A
-TALLY
DATA TO MASTER
EVER3.6
-CHARGE
CHARGE REF
BATT INT/-EXT
ACV 6.5/-8.4
EZ IN/-OUT
BATT RS
S STATUS
PRINPA IN
CAM Y
CAM C
CGH
CG CLK
CAM DD ON
TO VS-113 BOARD (6/8)
(SEE PAGE 4-61)
Q425 XP4312 MUTE
Q410 2SD2216 BUFFER
Q420 2SD2216 BUFFER
Q424 MA132WA
Q424 XP4312 INVERTER
Q423 2SC4919 V I/O SWITCH
IC422 SELECTOR
IC422 BA7627FV
IC421 CXA1812Q IN/OUT SELECT
Q421 MA6S121
Q426 XP4116 SWITCH
Q415 2SD2216 BUFFER
Q414 2SC4617 MIX AMP
Q416 UN9211 SWITCH
Q423 MA111
Q422 MA132WK
IC481 μPD6461GS G-E2
IC481 C.G.
Q427 UN9213 INVERTER
Q413 MA132WK-TX
Q414 MA132WK-TX
Q419 XP4116 SWITCH
Q415 MA132WK
CCD-TR3000
CCD-TR3000E
PB V
S JACK IN
-WRITE/HOLD
JACK MONO
COMP REC
CAM/-LINE
BL ON
STILL SLOW
V IN/-OUT
A OUT/-IN
V MUTE
LANC DC
LANC SIG
(SEE
EZ S
CAM


8
9
10
11
12
13
14
15
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
(G-24) Q423 2SC4919 V I/O SWITCH
R436 2.2k
R468 33 1608
R469 39 1608
(G-2) D410 MA132WK
D412 MA111 (H-3)
C414 0.47 F:2125
C439 0.47 F:2125
R450 10k
C415 0.1 F
C413 0.47 F:2125
C438 0.01 F
(E-2)
IC422
SELECTOR
IC422 BA7627FV
C437 0.01 F
C440 0.47 F:2125
R433 33 1608
R435 39 1608
(H-25) Q422 2SC4919 S-C I/O SWITCH
Q421 2SC4919 S-Y I/O SWITCH (G-2)
R486 2.2k
R428 2.2k
C432 0.1 B
Q412, 413 CURRENT LIMITER
R432 33 1608
R434 39 1608
R494 470k
CCD-TR3000E
CCD-TR3000
C428 2.2/6.3V
C428 1
R430 330
R429 220k
R431 1k
C429 220 4V :OTA-G
INV IN 32
S-Y OUT 31
OUT GND 30
CAM-C IN 29
V SEL 28
S-C IN 27
GND 26
CAM-Y IN 25
R481 10k
C436 0.47 F:2125
R482 10k
C425 0.47 F
CAM
EZ S
S
EZ
R498 1k
(G-1) Q417 2SB1462 JACK MONO SWITCH
R462 470k
R461 470k
R463 47k
C442 0.047 F
R457 820
R459 3.3 1/10W
(G-25) Q413 2SB798
Q412 2SD2216 (G-25)
R458 18k
R460 5.6k
C443 22 6.3V :TA-B
SS4
FD18
AU1 CL486 AU IO L
AU2 CL487 AU IO R
AU3 EZ L IO
AU4 EZ R IO
AU5 EP L OUT
AU6 EP R OUT
EZ IN/-OUT
⑰ TO VS-113 BOARD (7/8)
(SEE PAGE 4-63)
CN423 30P 0.5MM FPC (F-1)
1 AUDIO GND
2 AUDIO I/O R
3 AUDIO I/O L
4 EP R
5 EP L
6 JACK MONO
7 S-Y I/O
8 S GND
9 S-C I/O
10 S IN
11 VIDEO I/O
12 COMP GND
13 AV JACK IN
14 RFU DC OUT
15 EZ-L I/O
16 EZ IN/ OUT
17 EZ-R I/O
18 BATT/ EXT
19 EZ-Y I/O
20 EVER 3.6V
21 EZ-C I/O
22 CHARGE
23 EZ VIDEO I/O
24 CHARGE REF
25 BATT RS
26 ACV 6.5/ 8.4
27 S STSTUS
28 LANC DC
29 LANC SIG
30 GND
CL484
CL483
CL490
CL485
CL489
FD15
FD12
FD13
FD14
FD19
FD16
FD20
SS5
SS6
SS13
SS1
SS7
SS14
TO EZ-16 BOARD W104
(SEE PAGE 4-78)
FD07
FD09
FD05
FD03
FD02
CN422 15P 0.5MM FPC (I-7)
1 EVR GND
2 DATA TO SLAVE
3 EVR SCK
4 CS EVF DA
5 DATA TO MASTER
6 EVF UNREG GND
7 EVF UNREG
8 EVF 15V
9 EVF 5V
10 GND
11 EVF Y
12 TALLY LED
13 EVF C
14 Y/COMP CONT
15 BL ON
DD2
DD1
DD5
DD3
CL482
CL488
TO CZ-2 BOARD CN991
(SEE PAGE 4-79)
DD1 BL UNREG
DD2 BL GND
DD3 EVF 4.9V
DD5 EVF 15V
㉛ TO VS-113 BOARD (8/8)
(SEE PAGE 4-68)
SS7
SS8
SS15
SS13
D415 MA132WK (A-7)
SS3.5
(H-5) D413 MA132WK-TX
(H-5) D414 MA132WK-TX
R497 0
R480 390
PB V
SS1 -S JACK IN
SS2 -WRITE/HOLD
SS4 JACK MONO
SS7 COMP REC
SS8 CAM/-LINE
SS9 BL ON
SS11 *STILL SLOW
SS13 V IN/-OUT
SS14 A OUT/-IN
SS15 V MUTE
⑩ TO VS-113 BOARD (5/8)
(SEE PAGE 4-57)
SS5 LANC DC
SS6 LANC SIG
⑪ TO VS-113 BOARD (5/8)
(SEE PAGE 4-55)

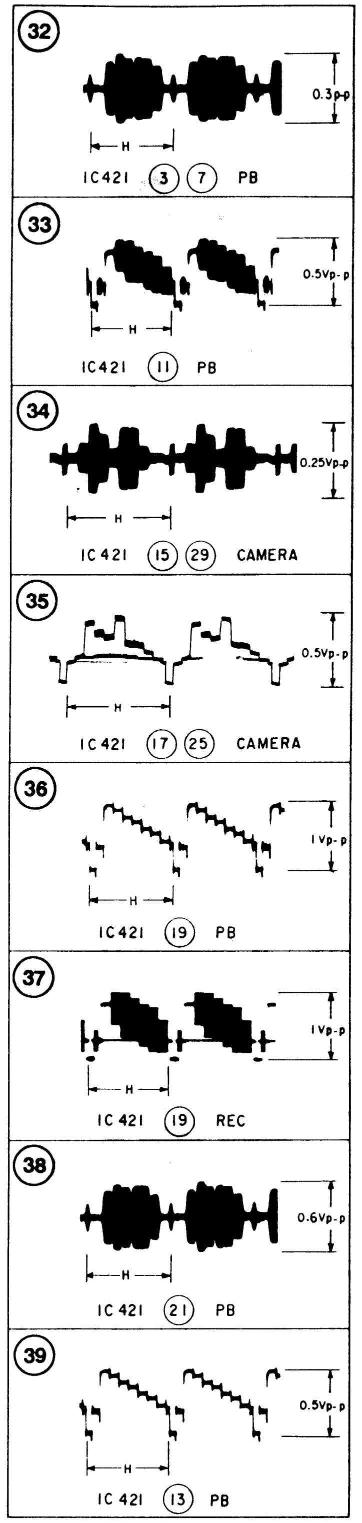
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	➡»»
PB	⇨	⇨»	⇨»»

VS-113 BOARD (4/8) (CCD-TR3000) NTSC



VS-113 BOARD (4/8) (CCD-TR3000E) PAL

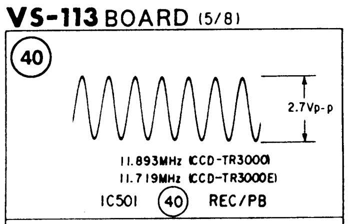


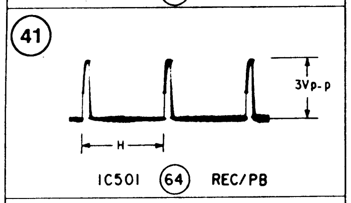
VS-113 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

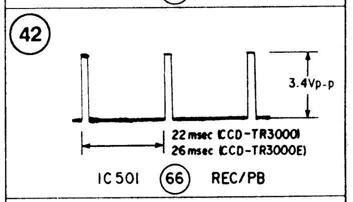
— Ref. No. VS-113 BOARD: 3000 series —

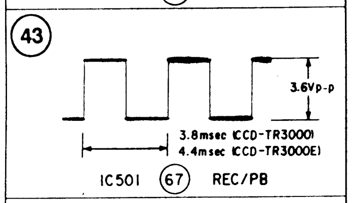
- Refer to page 4–34 for Printed Wiring Board.

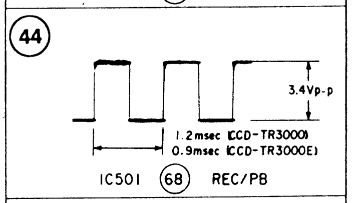
VS-113 BOARD (5/8)

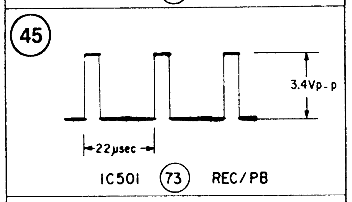


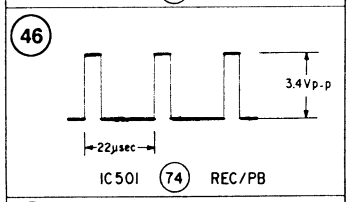


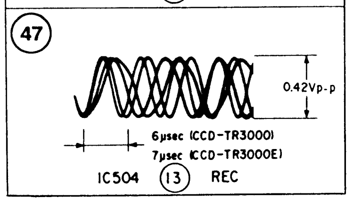


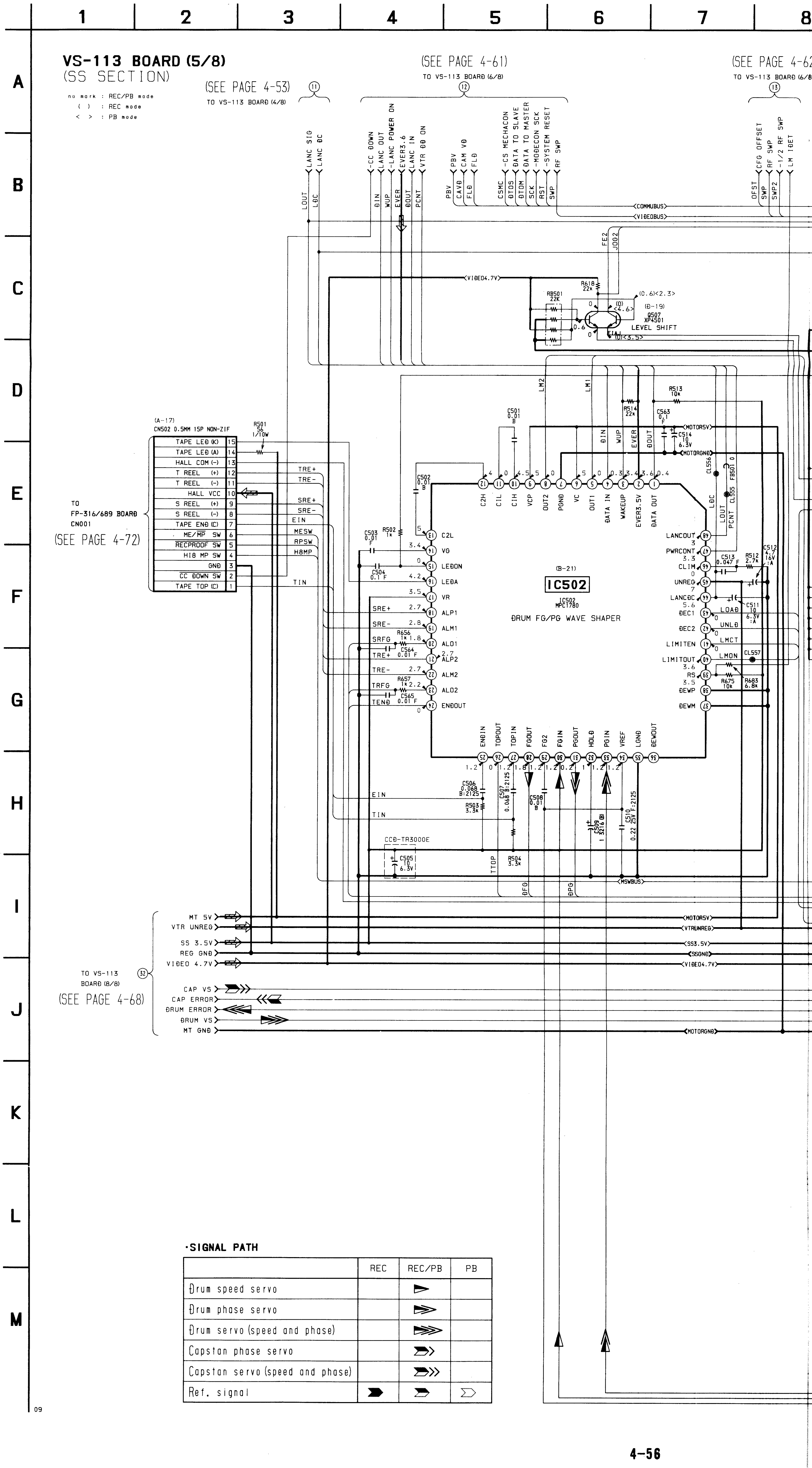








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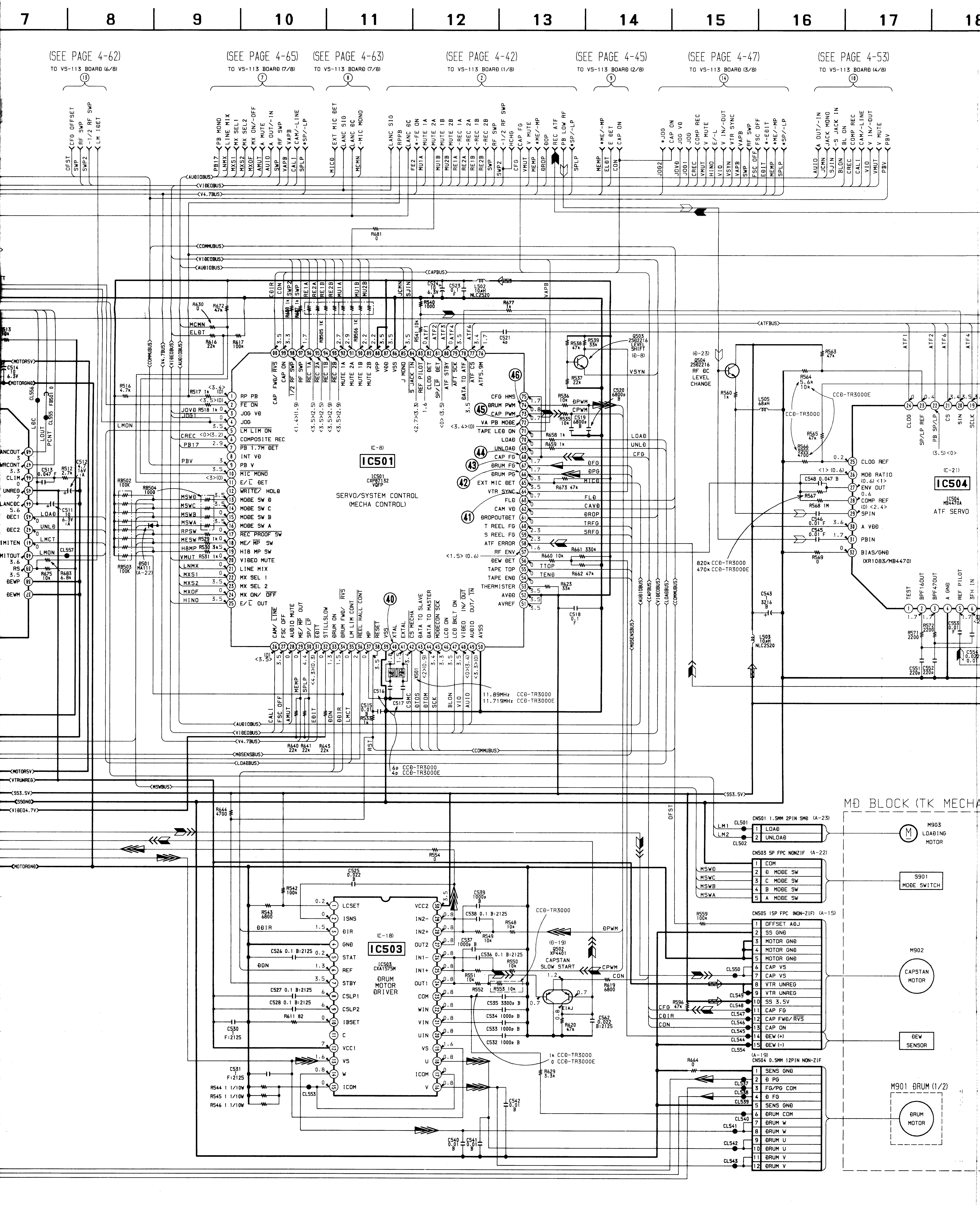
A
B
C
D
E
F
G
H
I
J
K
L
M
VS-113 BOARD (5/8)
(SS SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(SEE PAGE 4-53)
TO VS-113 BOARD (4/8)
11
(SEE PAGE 4-61)
TO VS-113 BOARD (6/8)
12
(SEE PAGE 4-62
TO VS-113 BOARD (6/8
13
LANC SIG
LANC DC
LOUT
LDC
-CC DOWN
LANC OUT
-LANC POWER ON
EVER3.6
LANC IN
VTR DD ON
DIN
WUP
EVER
DOUT
PCNT
PBV
CAM VD
FLD
CAVD
-CS MECHACON
DATA TO SLAVE
DATA TO MASTER
-MODECON SCK
-SYSTEM RESET
RF SWP
CSMC
DTOS
DTOM
SCK
RST
SWP
CFG OFFSET
RF SWP
-1/2 RF SWP
LM IDET
OFST
SWP2
<COMMUBUS>
<VIDEOBUS>
FE2
JOG2
<VIDEO4.7V>
R618 22K
RB501 22K
(0.6)<2.3>
(D-19)
Q507 XP4501
LEVEL SHIFT
(A-17)
CN502 0.5MM 15P NON-ZIF
R501 56 1/10W
TAPE LED (K) 15
TAPE LED (A) 14
HALL COM (-) 13
T REEL (+) 12
T REEL (-) 11
HALL VCC 10
S REEL (+) 9
S REEL (-) 8
TAPE END (C) 7
ME/MP SW 6
RECPROOF SW 5
HI8 MP SW 4
GND 3
CC DOWN SW 2
TAPE TOP (C) 1
TO FP-316/689 BOARD CN001
(SEE PAGE 4-72)
TRE+
TRE-
SRE+
SRE-
EIN
MESW
RPSW
H8MP
TIN
LM2
LM1
C501 0.01 B
R514 22k
R513 10k
C563 0.1 F
C514 10 6.3V
<MOTOR5V>
<MOTORGND>
CL556
FB501
CL555
C502 0.01 B
C503 0.01 F
R502 1k
C504 0.1 F
C2H
CIL
CIH
VCP
OUT2
PGND
VC
OUT1
DATA IN
WAKEUP
EVER3.5V
DATA OUT
C2L
VG
LEDON
LEDA
VR
ALP1
ALM1
ALO1
ALP2
ALM2
ALO2
ENDOUT
SRFG
TRFG
TEND
R656 1k
C564 0.01 F
R657 1k
C565 0.01 F
(B-21)
IC502
IC502 MPC1780
DRUM FG/PG WAVE SHAPER
LANCOUT
PWRCONT
CLIM
UNREG
LANCDC
DEC1
DEC2
LIMITEN
LIMITOUT
RS
DEWP
DEWM
C513 0.047 F
R512 2.7k
C512 4.7 16V :A
C511 10 6.3V :A
LOAD
UNLD
LMCT
LMON
CL557
R675 10k
R683 6.8k
ENDIN
TOPOUT
TOPIN
FGOUT
FG2
FGIN
PGOUT
HOLD
PGIN
VREF
LGND
DEWOUT
C506 0.068 B:2125
C507 0.068 B:2125
R503 3.3k
C508 0.01 B
C509 1 3216 (B)
C510 0.22 25V F:2125
CCD-TR3000E
C505 10 6.3V
R504 3.3k
TTOP
DFG
DPG
<MSWBUS>
MT 5V
VTR UNREG
SS 3.5V
REG GND
VIDEO 4.7V
TO VS-113 BOARD (8/8)
32
(SEE PAGE 4-68)
CAP VS
CAP ERROR
DRUM ERROR
DRUM VS
MT GND
<MOTOR5V>
<VTRUNREG>
<SS3.5V>
<SSGND>
<VIDEO4.7V>
<MOTORGND>
09

·**SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷>	
Drum servo (speed and phase)		▷>>	
Capstan phase servo		➢>	
Capstan servo (speed and phase)		➢>>	
Ref. signal	➤	➢	⇨


7
8
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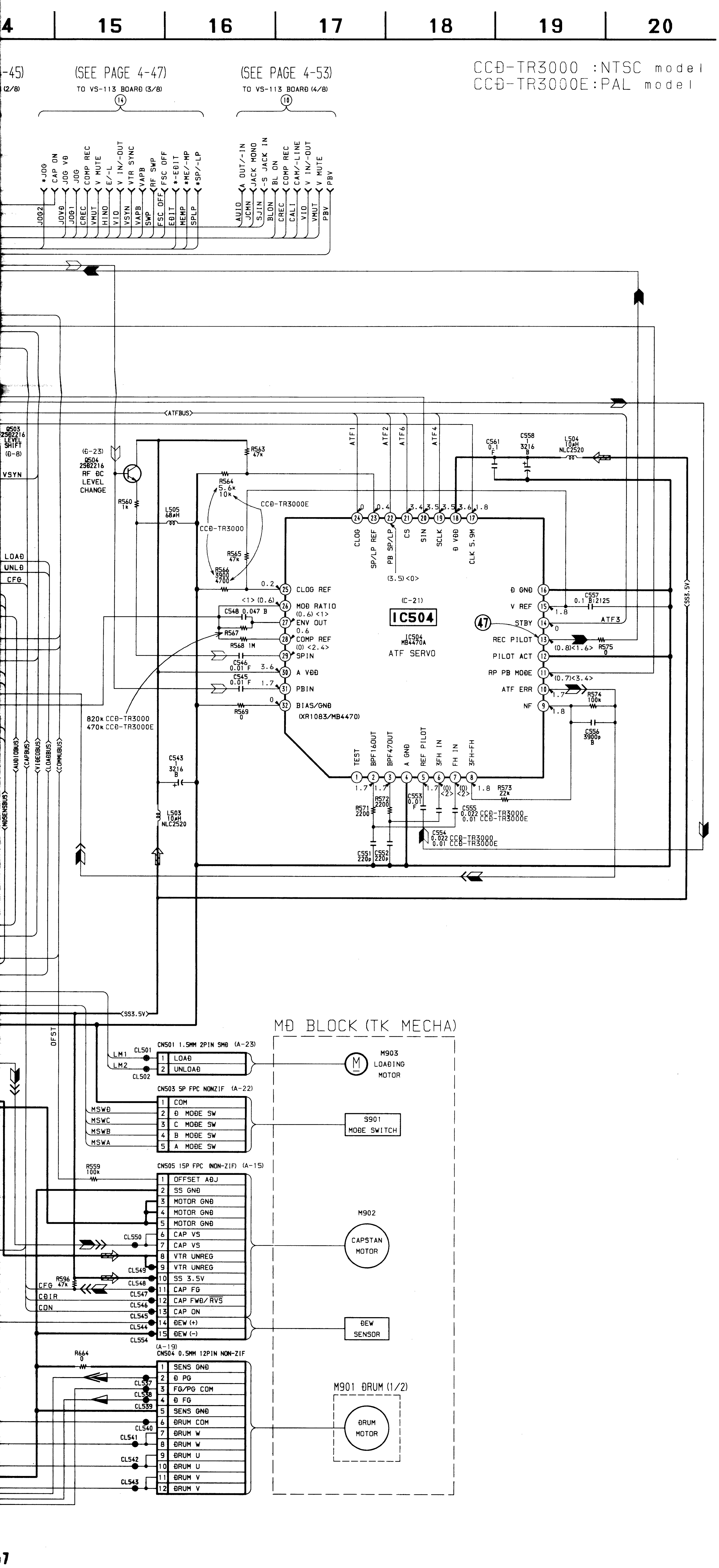
12
13
14
15
16
17
(SEE PAGE 4-62)
TO VS-113 BOARD (6/8)
⑬
(SEE PAGE 4-65)
TO VS-113 BOARD (7/8)
⑦
(SEE PAGE 4-63)
TO VS-113 BOARD (7/8)
⑧
(SEE PAGE 4-42)
TO VS-113 BOARD (1/8)
②
(SEE PAGE 4-45)
TO VS-113 BOARD (2/8)
⑨
(SEE PAGE 4-47)
TO VS-113 BOARD (3/8)
⑭
(SEE PAGE 4-53)
TO VS-113 BOARD (4/8)
⑩
CFG OFFSET
RF SWP
-1/2 RF SWP
LM IDET
PB MONO
LINE MIX
MX SEL1
MX SEL2
MX ON/-OFF
A MUTE
A OUT/-IN
RF SWP
VAPB
CAM/-LINE
*SP/-LP
EXT MIC DET
LANC SIG
LANC DC
-MIC MONO
LANC SIG
LANC DC
*-FE ON
MUTE 1A
MUTE 2A
MUTE 1B
MUTE 2B
-REC 1A
-REC 2A
-REC 1B
-REC 2B
RF SWP
-1/2 RF SWP
HCHG
V MUTE
*ME/-MP
DOP
REC ATF
PB LOW RF
*SP/-LP
*ME/-MP
E DET
CAP ON
*JOG
CAP ON
JOG VD
JOG
COMP REC
V MUTE
E/-L
V IN/-OUT
VTR SYNC
VAPB
RF SWP
FSC OFF
*-EDIT
*ME/-MP
*SP/-LP
A OUT/-IN
JACK MONO
-S JACK IN
BL ON
COMP REC
CAM/-LINE
V IN/-OUT
V MUTE
PBV
(AUDIOBUS)
(VIDEOBUS)
(V4.7BUS)
(COMMUBUS)
(CAPBUS)
(ATFBUS)
(MSWBUS)
(MDSENSBUS)
(LOADBUS)
(SS3.5V)
(MOTOR5V)
(VTRUNREG)
(SSGND)
(VIDEO4.7V)
(MOTORGND)
IC501
CXP87132
VQFP
(C-8)
SERVO/SYSTEM CONTROL
(MECHA CONTROL)
RP PB
FE ON
JOG VD
JOG
LM LIM ON
COMPOSITE REC
PB 1.7M DET
INT VD
PB V
MIC MONO
E/L DET
WRITE/ HOLD
MODE SW D
MODE SW C
MODE SW B
MODE SW A
REC PROOF SW
ME/MP SW
H18 MP SW
VIDEO MUTE
LINE MIX
MX SEL 1
MX SEL 2
MX ON/ OFF
E/L OUT
CFG HMS
DRUM PWM
CAP PWM
VA PB MODE
TAPE LED ON
LOAD
UNLOAD
CAP FG
DRUM FG
DRUM PG
EXT MIC DET
VTR SYNC
FLD
CAM VD
DROPOUTDET
T REEL FG
S REEL FG
ATF ERROR
RF ENV
DEW DET
TAPE TOP
TAPE END
THERMISTER
AVDD
AVREF
CAP FWD/RVS
CAP ON
1/2 RF SWP
RF SWP
REC 1A
REC 2A
REC 1B
REC 2B
MUTE 1A
MUTE 2A
MUTE 1B
MUTE 2B
VPP
VDD
VSS
J MONO
S JACK IN
REF PILOT
CLOG DET
SP/LP DET
AFT STBY
ATF SCK
DATA TO ATF
ATF CS
ATF5.9M
CAM/LINE
FSC OFF
AUDIO MUTE
ME/MP OUT
SP/LP
EDIT
STILLSLOW
DRUM ON
DRUM FWD/RVS
LM LIM CONT
REEL HALL CONT
MP
RESET
VSS
XTAL
EXTAL
CS MECHA
DATA TO SLAVE
DATA TO MASTER
MODECON SCK
LCD ON
LCD BKLT ON
VIDEO IN/OUT
AUDIO OUT/IN
AVSS
11.89MHz CCD-TR3000
11.719MHz CCD-TR3000E
6p CCD-TR3000
4p CCD-TR3000E
X501
Q503
2SD2216
LEVEL SHIFT
(D-8)
Q504
2SD2216
RF DC LEVEL CHANGE
(D-23)
820k CCD-TR3000
470k CCD-TR3000E
CCD-TR3000
CCD-TR3000E
IC504
MB4470A
ATF SERVO
(C-21)
CLOG REF
MOD RATIO
ENV OUT
COMP REF
SPIN
A VDD
PBIN
BIAS/GND
(XR1083/MB4470)
CLOG
SP/LP REF
PB SP/LP
CS
SIN
SCLK
TEST
BPF16OUT
BPF47OUT
A GND
REF PILOT
3FH IN
ATF1
ATF2
ATF6
ATF4
IC503
CXA1575M
(C-18)
DRUM MOTOR DRIVER
LCSET
ISNS
DIR
GND
STAT
REF
STBY
CSLP1
CSLP2
IBSET
C
VCC1
VS
W
ICOM
VCC2
IN2-
IN2+
OUT2
IN1-
IN1+
OUT1
COM
WIN
VIN
UIN
VS
U
ICOM
V
Q502
XP4401
CAPSTAN SLOW START
(D-19)
1k CCD-TR3000
0 CCD-TR3000E
MD BLOCK (TK MECHA
CN501 1.5MM 2PIN SMD (A-23)
LOAD
UNLOAD
M903
LOADING MOTOR
CN503 5P FPC NONZIF (A-22)
COM
D MODE SW
C MODE SW
B MODE SW
A MODE SW
S901
MODE SWITCH
CN505 15P FPC (NON-ZIF) (A-15)
OFFSET ADJ
SS GND
MOTOR GND
MOTOR GND
MOTOR GND
CAP VS
CAP VS
VTR UNREG
VTR UNREG
SS 3.5V
CAP FG
CAP FWD/RVS
CAP ON
DEW (+)
DEW (-)
M902
CAPSTAN MOTOR
DEW SENSOR
CN504 0.5MM 12PIN NON-ZIF
(A-19)
SENS GND
D PG
FG/PG COM
D FG
SENS GND
DRUM COM
DRUM W
DRUM W
DRUM U
DRUM U
DRUM V
DRUM V
M901 DRUM (1/2)
DRUM MOTOR



CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model

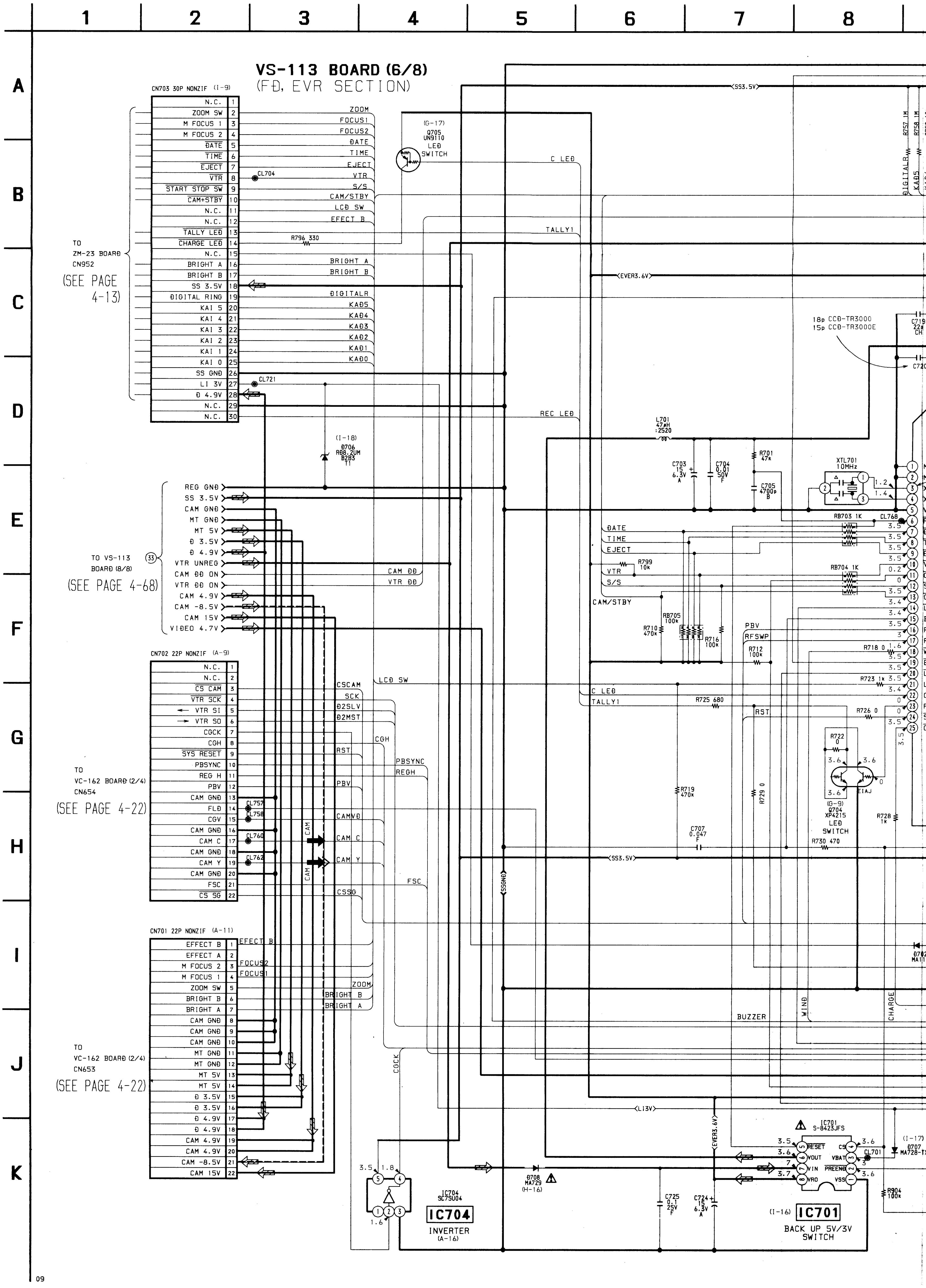
15
16
17
18
19
20
(SEE PAGE 4-47)
TO VS-113 BOARD (3/8)
(14)
(SEE PAGE 4-53)
TO VS-113 BOARD (4/8)
(10)
JOG2 *JOG
JOVD CAP ON
JOG1 JOG VD
CREC JOG
VMUT COMP REC
HINO V MUTE
VIO E/-L
VSYN V IN/-OUT
VAPB VTR SYNC
SWP VAPB
FSC OFF RF SWP
EDIT FSC OFF
MEMP *-EDIT
SPLP *ME/-MP
*SP/-LP
AUIO A OUT/-IN
JCMN JACK MONO
SJIN -S JACK IN
BLON BL ON
CREC COMP REC
CALI CAM/-LINE
VIO V IN/-OUT
VMUT V MUTE
PBV PBV
<ATFBUS>
Q503 2SB2216 LEVEL SHIFT (B-8)
VSYN
Q504 2SB2216 RF BC LEVEL CHANGE (D-23)
R563 47k
R564 5.6k 10k
CCD-TR3000E
R560 1k
L505 68μH
CCD-TR3000
R565 47k
R566 3900 4700
ATF1
ATF2
ATF6
ATF4
C561 0.1 F
C558 1 3216 B
L504 10μH NLC2520
IC504
MB4470A
ATF SERVO
(C-21)
24 CLOG
23 SP/LP REF
22 PB SP/LP
21 CS
20 SIN
19 SCLK
18 D VDD
17 CLK 5.9M
(3.5) <0>
25 CLOG REF
26 MDD RATIO
27 ENV OUT
28 COMP REF
29 SPIN
30 A VDD
31 PBIN
32 BIAS/GND
(XR1083/MB4470)
16 D GND
15 V REF
14 STBY
13 REC PILOT
12 PILOT ACT
11 RP PB MODE
10 ATF ERR
9 NF
1 TEST
2 BPF16OUT
3 BPF47OUT
4 A GND
5 REF PILOT
6 3FH IN
7 FH IN
8 3FH-FH
C557 0.1 B:2125
ATF3
(47)
R575 0
R574 100k
C556 3900p B
R573 22k
C548 0.047 B
R567
R568 1M
C546 0.01 F
C545 0.01 F
R569 0
820k CCD-TR3000
470k CCD-TR3000E
C543 1 3216 B
L503 10μH NLC2520
R571 2200
R572 2200
C553 0.01 F
C555 0.022 CCD-TR3000 0.01 CCD-TR3000E
C554 0.022 CCD-TR3000 0.01 CCD-TR3000E
C551 220p
C552 220p
<SS3.5V>
LOAD
UNLD
CFG
<AUDIOBUS>
<CAPBUS>
<VIDEOBUS>
<LOADBUS>
<COMMUBUS>
<MDSENSBUS>
OFST
MD BLOCK (TK MECHA)
CN501 1.5MM 2PIN SMD (A-23)
LM1 CL501
LM2 CL502
1 LOAD
2 UNLOAD
M903 LOADING MOTOR
CN503 5P FPC NONZIF (A-22)
MSWD
MSWC
MSWB
MSWA
1 COM
2 D MODE SW
3 C MODE SW
4 B MODE SW
5 A MODE SW
S901 MODE SWITCH
R559 100k
CN505 15P FPC (NON-ZIF) (A-15)
1 OFFSET ADJ
2 SS GND
3 MOTOR GND
4 MOTOR GND
5 MOTOR GND
6 CAP VS
7 CAP VS
8 VTR UNREG
9 VTR UNREG
10 SS 3.5V
11 CAP FG
12 CAP FWD/RVS
13 CAP ON
14 DEW (+)
15 DEW (-)
CL550
CL549
CL548
CL547
CL546
CL545
CL544
CL554
R596 47k
CFG
CDIR
CON
M902
CAPSTAN MOTOR
DEW SENSOR
R664 0
(A-19)
CN504 0.5MM 12PIN NON-ZIF
1 SENS GND
2 D PG
3 FG/PG COM
4 D FG
5 SENS GND
6 DRUM COM
7 DRUM W
8 DRUM W
9 DRUM U
10 DRUM U
11 DRUM V
12 DRUM V
CL537
CL538
CL539
CL540
CL541
CL542
CL543
M901 DRUM (1/2)
DRUM MOTOR

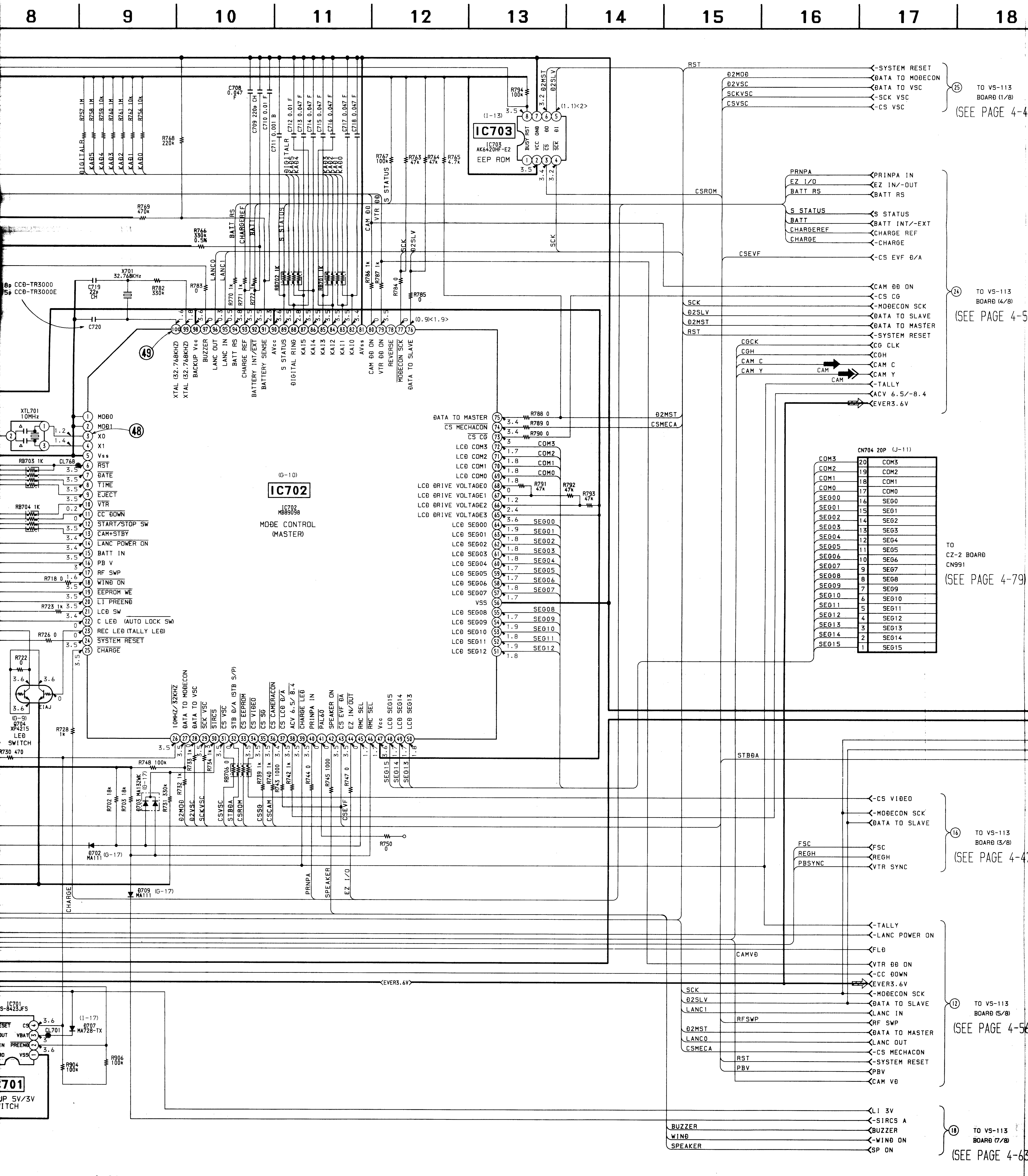
SERVO/SYSTEM CONTROL
VS-113 (5/8)

VS-113 (MODE CONTROL) SCHEMATIC DIAGRAM

— Ref. No. VS-113 BOARD: 3000 series —

- Refer to page 4-34 for Printed Wiring Board.


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
VS-113 BOARD (6/8)
(FD, EVR SECTION)
CN703 30P NONZIF (I-9)
N.C.
ZOOM SW
M FOCUS 1
M FOCUS 2
DATE
TIME
EJECT
VTR
START STOP SW
CAM+STBY
TALLY LED
CHARGE LED
BRIGHT A
BRIGHT B
SS 3.5V
DIGITAL RING
KAI 5
KAI 4
KAI 3
KAI 2
KAI 1
KAI 0
SS GND
LI 3V
D 4.9V
TO ZM-23 BOARD CN952
(SEE PAGE 4-13)
CL704
CL721
(G-17) Q705 UN9110 LED SWITCH
R796 330
C LED
TALLY1
<SS3.5V>
<EVER3.6V>
REC LED
(I-18) D706 RB8.2UM B2B3 T1
L701 47μH :2520
C703 15 6.3V A
C704 0.01 50V F
R701 47k
C705 4700p B
XTL701 10MHz
18p CCD-TR3000
15p CCD-TR3000E
RB703 1K
RB704 1K
CL768
R799 10k
RB705 100k
R710 470k
R716 100k
R712 100k
PBV
RFSWP
R718 0
R723 1k
R726 0
R725 680
RST
R722 0
(G-9) Q704 XP4215 LED SWITCH
R728 1k
R730 470
R719 470k
R729 0
C707 0.047 F
REG GND
SS 3.5V
CAM GND
MT GND
MT 5V
D 3.5V
D 4.9V
VTR UNREG
CAM DD ON
VTR DD ON
CAM 4.9V
CAM -8.5V
CAM 15V
VIDEO 4.7V
TO VS-113 BOARD (8/8)
(SEE PAGE 4-68)
CAM DD
VTR DD
CN702 22P NONZIF (A-9)
CS CAM
VTR SCK
VTR SI
VTR SO
CGCK
CGH
SYS RESET
PBSYNC
REG H
PBV
FLD
CGV
CAM C
CAM Y
FSC
CS SG
CL757
CL758
CL760
CL762
TO VC-162 BOARD (2/4) CN654
(SEE PAGE 4-22)
CSCAM
SCK
D2SLV
D2MST
CAMVD
CSSG
LCD SW
CAM
CN701 22P NONZIF (A-11)
EFFECT B
EFFECT A
TO VC-162 BOARD (2/4) CN653
(SEE PAGE 4-22)
<SSGND>
BUZZER
WIND
CHARGE
<LI3V>
<EVER3.6V>
IC704 SC7SU04
IC704
INVERTER (A-16)
D708 MA729 (H-16)
C725 0.1 25V F
C724 15 6.3V A
IC701 S-8423JFS
RESET
VOUT
VIN
VRO
CS
VBAT
PREEN
VSS
CL701
(I-17) D707 MA728
R904 100k
(I-16) IC701
BACK UP 5V/3V SWITCH
09



8
9
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11
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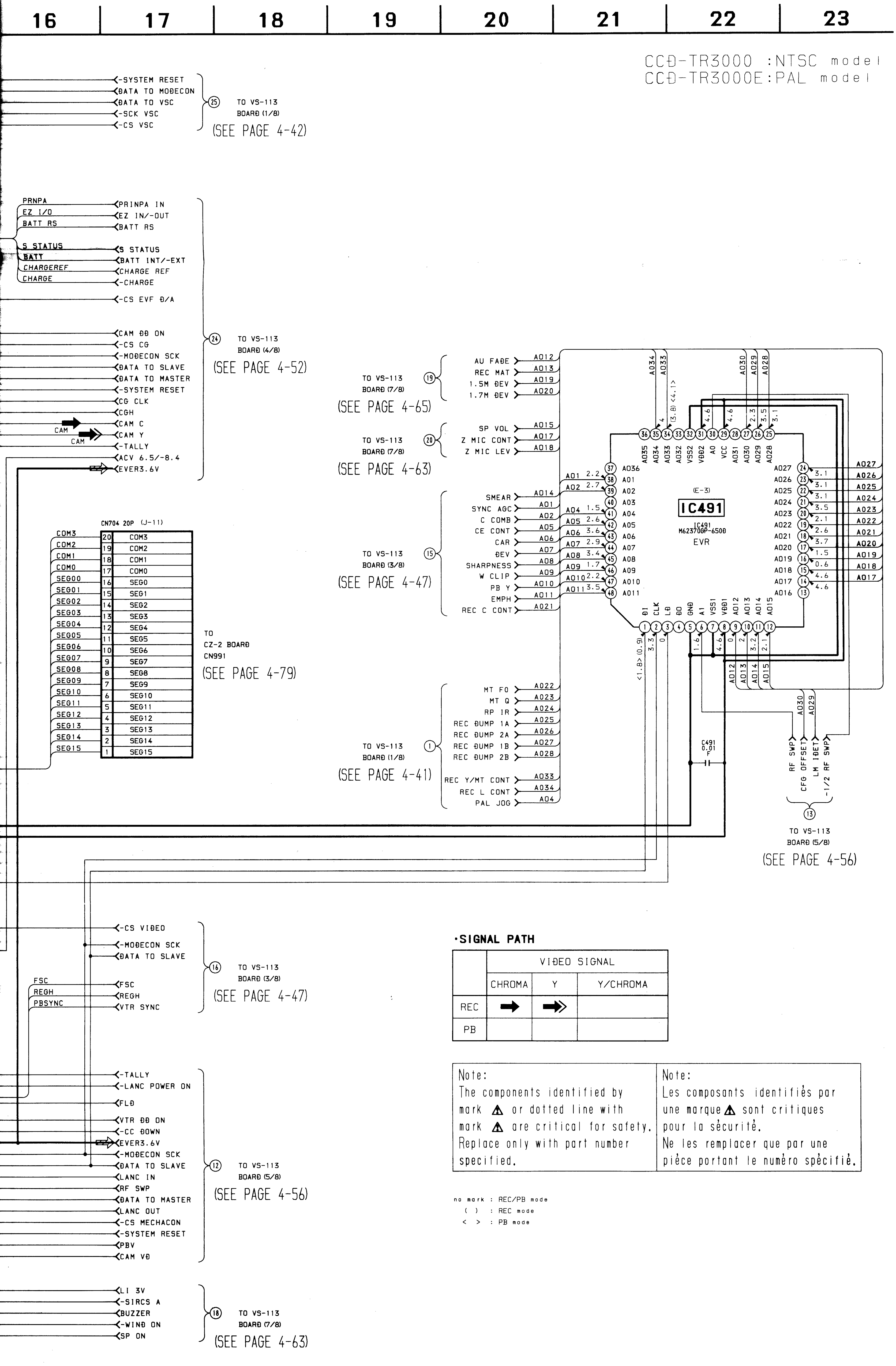
14
15
16
17
18
IC703
AK6420HF-E2
EEP ROM
IC702
MB89098
MODE CONTROL
(MASTER)
X701
32.768KHz
XTL701
10MHz
CCD-TR3000
CCD-TR3000E
DATA TO MASTER
CS MECHACON
CS CG
LCD COM3
LCD COM2
LCD COM1
LCD COM0
LCD DRIVE VOLTAGE0
LCD DRIVE VOLTAGE1
LCD DRIVE VOLTAGE2
LCD DRIVE VOLTAGE3
LCD SEG00
LCD SEG01
LCD SEG02
LCD SEG03
LCD SEG04
LCD SEG05
LCD SEG06
LCD SEG07
VSS
LCD SEG08
LCD SEG09
LCD SEG10
LCD SEG11
LCD SEG12
MOD0
MOD1
X0
X1
Vss
RST
DATE
TIME
EJECT
VTR
CC DOWN
START/STOP SW
CAM+STBY
LANC POWER ON
BATT IN
PB V
RF SWP
WIND ON
EEPROM WE
LI PREEND
LCD SW
C LED (AUTO LOCK SW)
REC LED (TALLY LED)
SYSTEM RESET
CHARGE
XTAL (32.768KHZ)
XTAL (32.768KHZ)
BACKUP Vcc
BUZZER
LANC OUT
LANC IN
BATT RS
CHARGE REF
BATTERY INT/EXT
BATTERY SENSE
AVcc
S STATUS
DIGITAL RING
KA15
KA14
KA13
KA12
KA11
KA10
AVss
CAM DD ON
VTR DD ON
REVERSE
MODECON SCK
DATA TO SLAVE
10MHZ/32KHZ
DATA TO MODECON
DATA TO VSC
SCK VSC
SIRCS
CS VSC
STB D/A (STB S/P)
CS EEPROM
CS VIDEO
CS SG
CS CAMERACON
CS LCD D/A
ACV 6.5/ 8.4
CHARGE LED
PRINPA IN
PAL60
SPEAKER ON
CS EVF DA
EZ IN/OUT
RMC SEL
Vcc
LCD SEG15
LCD SEG14
LCD SEG13
CN704 20P (J-11)
COM3
COM2
COM1
COM0
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
TO CZ-2 BOARD CN991
(SEE PAGE 4-79)
-SYSTEM RESET
DATA TO MODECON
DATA TO VSC
-SCK VSC
-CS VSC
TO VS-113 BOARD (1/8)
(SEE PAGE 4-4
PRINPA IN
EZ IN/-OUT
BATT RS
S STATUS
BATT INT/-EXT
CHARGE REF
-CHARGE
-CS EVF D/A
CAM DD ON
-CS CG
-MODECON SCK
DATA TO SLAVE
DATA TO MASTER
-SYSTEM RESET
CG CLK
CGH
CAM C
CAM Y
-TALLY
ACV 6.5/-8.4
EVER3.6V
TO VS-113 BOARD (4/8)
(SEE PAGE 4-5
-CS VIDEO
-MODECON SCK
DATA TO SLAVE
FSC
REGH
VTR SYNC
TO VS-113 BOARD (3/8)
(SEE PAGE 4-4
-TALLY
-LANC POWER ON
FLD
VTR DD ON
-CC DOWN
EVER3.6V
-MODECON SCK
DATA TO SLAVE
LANC IN
RF SWP
DATA TO MASTER
LANC OUT
-CS MECHACON
-SYSTEM RESET
PBV
CAM VD
TO VS-113 BOARD (5/8)
(SEE PAGE 4-5
LI 3V
-SIRCS A
BUZZER
-WIND ON
SP ON
TO VS-113 BOARD (7/8)
(SEE PAGE 4-6
IC701
S-8423JFS
BACKUP 5V/3V SWITCH
D707 MA728-TX
D702 MA111
D709 MA111
D703 MA132WK
Q704 XP4215
LED SWITCH
EIAJ
(EVER3.6V)

CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model


16
17
18
19
20
21
22
23
-SYSTEM RESET
DATA TO MODECON
DATA TO VSC
-SCK VSC
-CS VSC
25
TO VS-113 BOARD (1/8)
(SEE PAGE 4-42)
PRNPA
EZ I/O
BATT RS
S STATUS
BATT
CHARGEREF
CHARGE
PRINPA IN
EZ IN/-OUT
BATT RS
S STATUS
BATT INT/-EXT
CHARGE REF
-CHARGE
-CS EVF D/A
CAM DD ON
-CS CG
-MODECON SCK
DATA TO SLAVE
DATA TO MASTER
-SYSTEM RESET
CG CLK
CGH
CAM C
CAM Y
-TALLY
ACV 6.5/-8.4
EVER3.6V
CAM
CAM
24
TO VS-113 BOARD (4/8)
(SEE PAGE 4-52)
CN704 20P (J-11)
COM3
COM2
COM1
COM0
SEG00
SEG01
SEG02
SEG03
SEG04
SEG05
SEG06
SEG07
SEG08
SEG09
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
TO CZ-2 BOARD CN991
(SEE PAGE 4-79)
AU FADE
REC MAT
1.5M DEV
1.7M DEV
19
TO VS-113 BOARD (7/8)
(SEE PAGE 4-65)
SP VOL
Z MIC CONT
Z MIC LEV
20
TO VS-113 BOARD (7/8)
(SEE PAGE 4-63)
SMEAR
SYNC AGC
C COMB
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
REC C CONT
15
TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
MT FO
MT Q
RP IR
REC DUMP 1A
REC DUMP 2A
REC DUMP 1B
REC DUMP 2B
REC Y/MT CONT
REC L CONT
PAL JOG
1
TO VS-113 BOARD (1/8)
(SEE PAGE 4-41)
(E-3)
IC491
IC491 M62370GP-650D
EVR
A036 A01 A02 A03 A04 A05 A06 A07 A08 A09 A010 A011
A035 A034 A033 A032 VSS2 VDD2 A0 VCC A031 A030 A029 A028
A027 A026 A025 A024 A023 A022 A021 A020 A019 A018 A017 A016
DI CLK LD DO GND A1 VSS1 VDD1 A012 A013 A014 A015
(3.8) <4.1>
<1.8> (0.9)
C491 0.01 F
RF SWP
CFG OFFSET
LM IDET
-1/2 RF SWP
13
TO VS-113 BOARD (5/8)
(SEE PAGE 4-56)
-CS VIDEO
-MODECON SCK
DATA TO SLAVE
FSC
REGH
PBSYNC
FSC
REGH
VTR SYNC
16
TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
-TALLY
-LANC POWER ON
FLD
VTR DD ON
-CC DOWN
EVER3.6V
-MODECON SCK
DATA TO SLAVE
LANC IN
RF SWP
DATA TO MASTER
LANC OUT
-CS MECHACON
-SYSTEM RESET
PBV
CAM VD
12
TO VS-113 BOARD (5/8)
(SEE PAGE 4-56)
LI 3V
-SIRCS A
BUZZER
-WIND ON
SP ON
18
TO VS-113 BOARD (7/8)
(SEE PAGE 4-63)

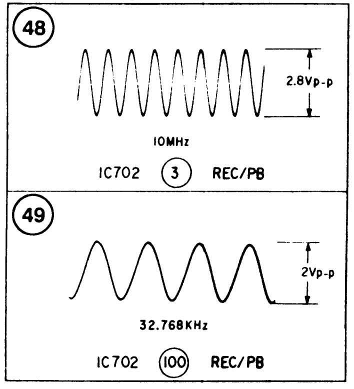
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	
PB			

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

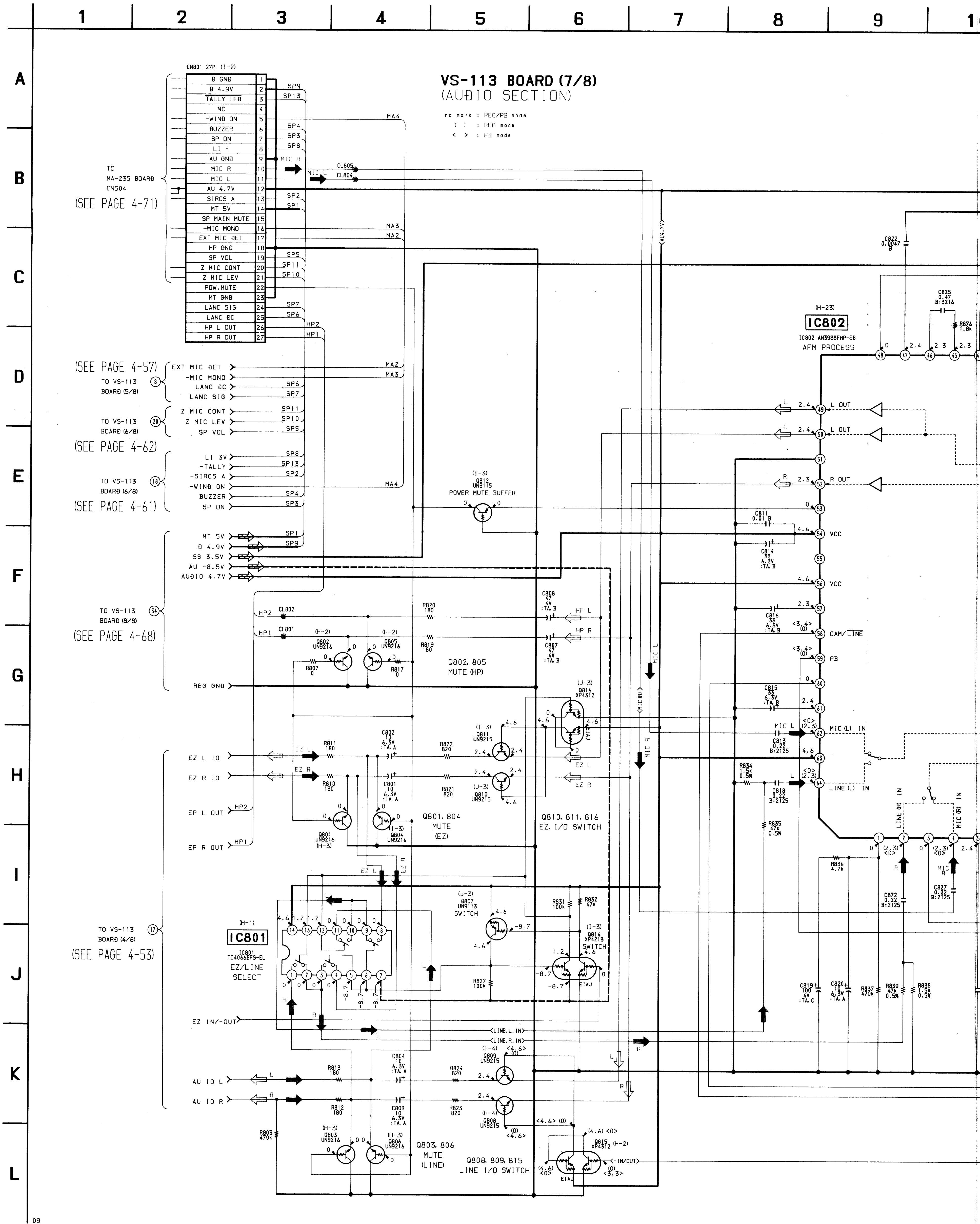
VS-113 BOARD (6/8)



VS-113 (AUDIO) SCHEMATIC DIAGRAM

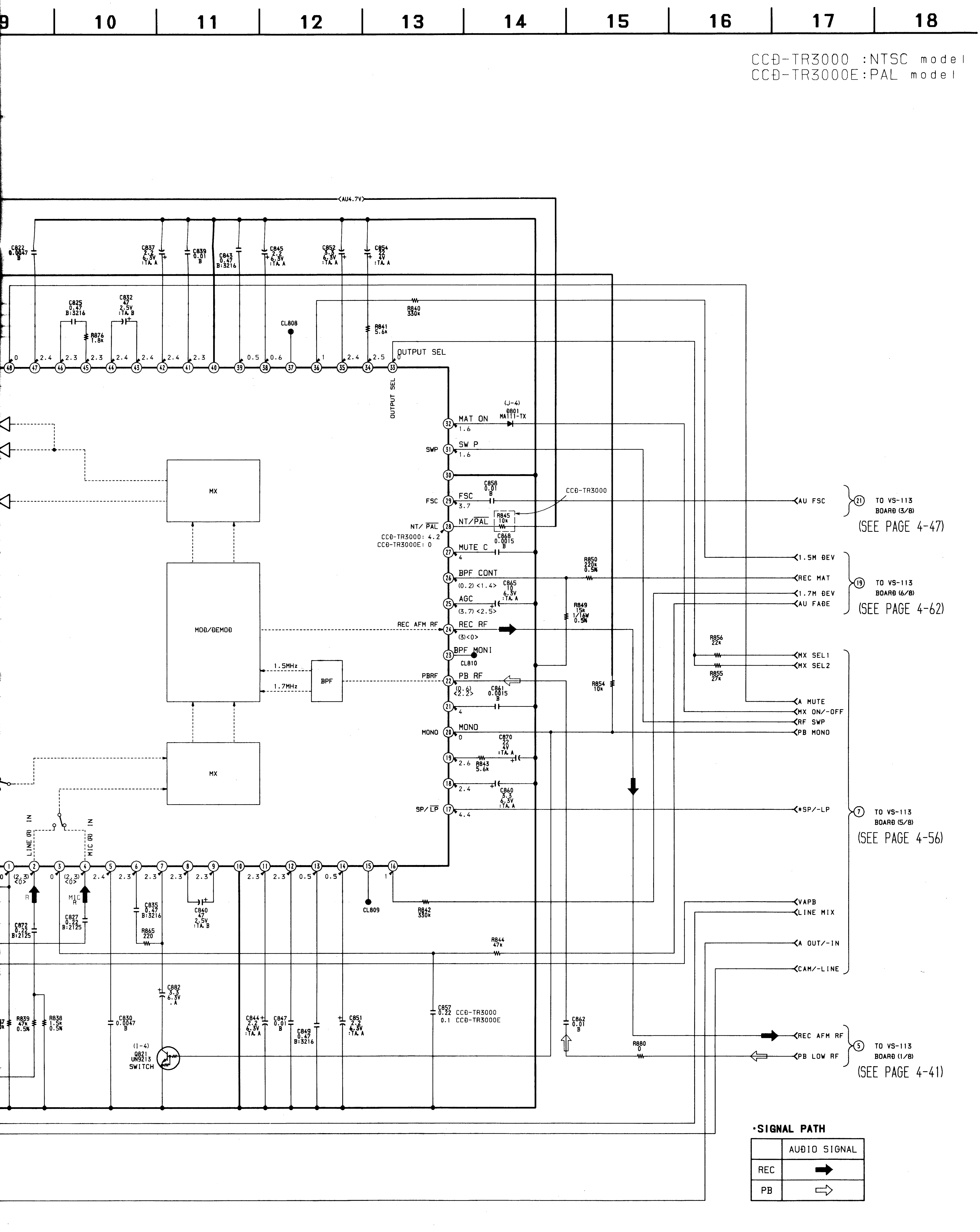
— Ref. No. VS-113 BOARD: 3000 series —

- Refer to page 4–34 for Printed Wiring Board.



VS-113 BOARD (7/8)
(AUDIO SECTION)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN801 27P (1-2)
D GND
D 4.9V
TALLY LED
NC
-WIND ON
BUZZER
SP ON
LI +
AU GND
MIC R
MIC L
AU 4.7V
SIRCS A
MT 5V
SP MAIN MUTE
-MIC MONO
EXT MIC DET
HP GND
SP VOL
Z MIC CONT
Z MIC LEV
POW.MUTE
MT GND
LANC SIG
LANC DC
HP L OUT
HP R OUT
TO MA-235 BOARD CN504
(SEE PAGE 4-71)
(SEE PAGE 4-57)
TO VS-113 BOARD (5/8)
TO VS-113 BOARD (6/8)
(SEE PAGE 4-62)
TO VS-113 BOARD (6/8)
(SEE PAGE 4-61)
TO VS-113 BOARD (8/8)
(SEE PAGE 4-68)
TO VS-113 BOARD (4/8)
(SEE PAGE 4-53)
EXT MIC DET
-MIC MONO
LANC DC
LANC SIG
Z MIC CONT
Z MIC LEV
SP VOL
LI 3V
-TALLY
-SIRCS A
-WIND ON
BUZZER
SP ON
MT 5V
D 4.9V
SS 3.5V
AU -8.5V
AUDIO 4.7V
REG GND
EZ L IO
EZ R IO
EP L OUT
EP R OUT
EZ IN/-OUT
AU IO L
AU IO R
(I-3) Q812 UN9115 POWER MUTE BUFFER
Q802, 805 MUTE (HP)
Q801, 804 MUTE (EZ)
Q810, 811, 816 EZ. I/O SWITCH
(H-1) IC801 TC4066BFS-EL EZ/LINE SELECT
(J-3) Q807 UN9113 SWITCH
(I-3) Q814 XP4213 SWITCH
Q803, 806 MUTE (LINE)
Q808, 809, 815 LINE I/O SWITCH
(I-4) Q809 UN9215
(H-4) Q808 UN9215
Q815 XP4312 (H-2)
EIAJ
<LINE.L.IN>
<LINE.R.IN>
<-IN/OUT>
(AU4.7V)
(H-23) IC802 AN3988FHP-EB AFM PROCESS
L OUT
L OUT
R OUT
VCC
VCC
CAM/LINE
PB
MIC (L) IN
LINE (L) IN
LINE (R) IN
MIC (R) IN
C822 0.0047 B
C825 0.47 B:3216
R876 1.8k
C811 0.01 B
C814 33 6.3V :TA B
C816 33 6.3V :TA B
C815 33 6.3V :TA B
C813 0.22 B:2125
C818 0.22 B:2125
R834 1.5k 0.5%
R835 47k 0.5%
R836 4.7k
C872 0.22 B:2125
C827 0.22 B:2125
C819 100 4V :TA C
C820 10 6.3V :TA A
R837 470k
R839 47k 0.5%
R838 1.5k 0.5%
C808 47 4V :TA B
C807 47 4V :TA B
R820 180
R819 180
R807 0
R817 0
R811 180
R810 180
C802 10 6.3V :TA A
C801 10 6.3V :TA A
R822 820
R821 820
R831 100k
R832 47k
R827 100k
R813 180
R812 180
C804 10 6.3V :TA A
C803 10 6.3V :TA A
R824 820
R823 820
R803 470k
CL801
CL802
CL804
CL805
09

CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model


9
10
11
12
13
14
15
16
17
18
<AU4.7V>
OUTPUT SEL
MAT ON
SW P
FSC
NT/PAL
MUTE C
BPF CONT
AGC
REC RF
BPF MONI
PB RF
MONO
SP/LP
REC AFM RF
PBRF
MX
MOD/DEMOD
BPF
1.5MHz
1.7MHz
LINE (R) IN
MIC (R) IN
CCD-TR3000: 4.2
CCD-TR3000E: 0
CCD-TR3000
D801 MA111-TX
(J-4)
R845 10k
CL808
CL809
CL810
Q821 UN9213 SWITCH
(I-4)
C857 0.22 CCD-TR3000
0.1 CCD-TR3000E
AU FSC
21 TO VS-113 BOARD (3/8)
(SEE PAGE 4-47)
1.5M DEV
REC MAT
1.7M DEV
AU FADE
19 TO VS-113 BOARD (6/8)
(SEE PAGE 4-62)
MX SEL1
MX SEL2
A MUTE
MX ON/-OFF
RF SWP
PB MONO
*SP/-LP
7 TO VS-113 BOARD (5/8)
(SEE PAGE 4-56)
VAPB
LINE MIX
A OUT/-IN
CAM/-LINE
REC AFM RF
PB LOW RF
5 TO VS-113 BOARD (1/8)
(SEE PAGE 4-41)

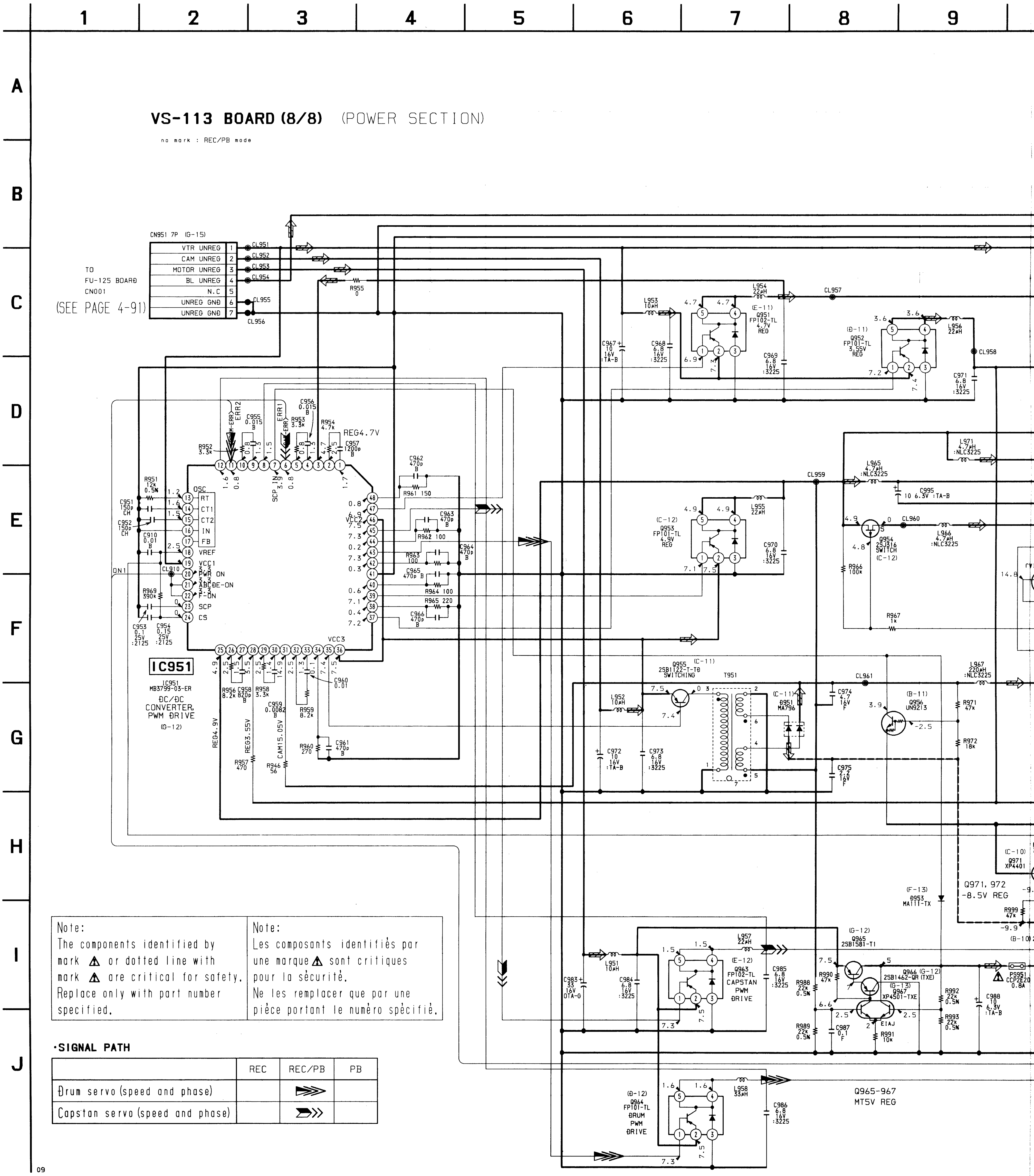
·SIGNAL PATH

	AUDIO SIGNAL
REC	➡
PB	⇨

VS-113 (POWER) SCHEMATIC DIAGRAM

— Ref. No. VS-113 BOARD: 3000 series —

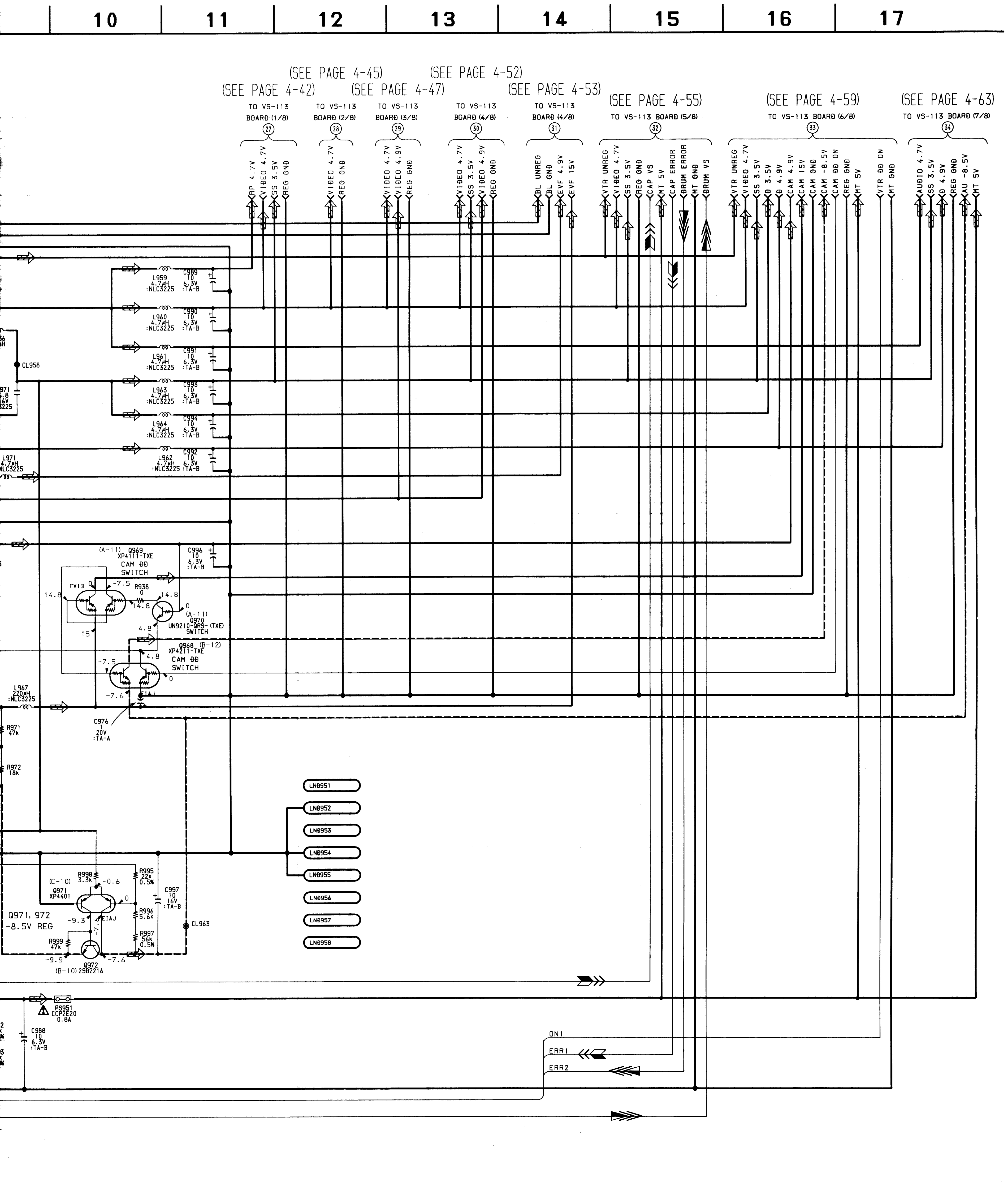
- Refer to page 4-34 for Printed Wiring Board.


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
VS-113 BOARD (8/8) (POWER SECTION)
no mark : REC/PB mode
CN951 7P (G-15)
VTR UNREG 1
CAM UNREG 2
MOTOR UNREG 3
BL UNREG 4
N.C 5
UNREG GND 6
UNREG GND 7
TO FU-125 BOARD CN001 (SEE PAGE 4-91)
CL951
CL952
CL953
CL954
CL955
CL956
R955 0
IC951
IC951 MB3799-03-ER DC/DC CONVERTER, PWM DRIVE (G-12)
OSC
RT
CT1
CT2
IN
FB
VREF
VCC1
PWR ON
ABCDE-ON
F-ON
SCP
CS
VCC2
VCC3
REG4.7V
REG4.9V
REG3.55V
CAM15.05V
L953 10μH
L954 22μH
CL957
Q951 FP102-TL 4.7V REG (E-11)
Q952 FP101-TL 3.55V REG (D-11)
L956 22μH
CL958
L971 4.7μH :NLC3225
L965 4.7μH :NLC3225
CL959
L955 22μH
Q953 FP101-TL 4.9V REG (C-12)
Q954 2SJ316 SWITCH (C-12)
CL960
L966 4.7μH :NLC3225
Q955 2SB1122-T-TD SWITCHING (C-11)
T951
L952 10μH
D951 MA796 (C-11)
CL961
Q956 UN9213 (B-11)
L967 220μH :NLC3225
Q971 XP4401 (C-10)
Q971, 972 -8.5V REG
D953 MA111-TX (F-13)
L951 10μH
L957 22μH
Q963 FP102-TL CAPSTAN PWM DRIVE (E-12)
Q965 2SB1581-T1 (G-12)
Q966 2SB1462-QR (TXE) (G-12)
Q967 XP4501-TXE (G-13)
PS951 CCP2E20 0.8A
L958 33μH
Q964 FP101-TL DRUM PWM DRIVE (B-12)
Q965-967 MT5V REG
09

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

·SIGNAL PATH

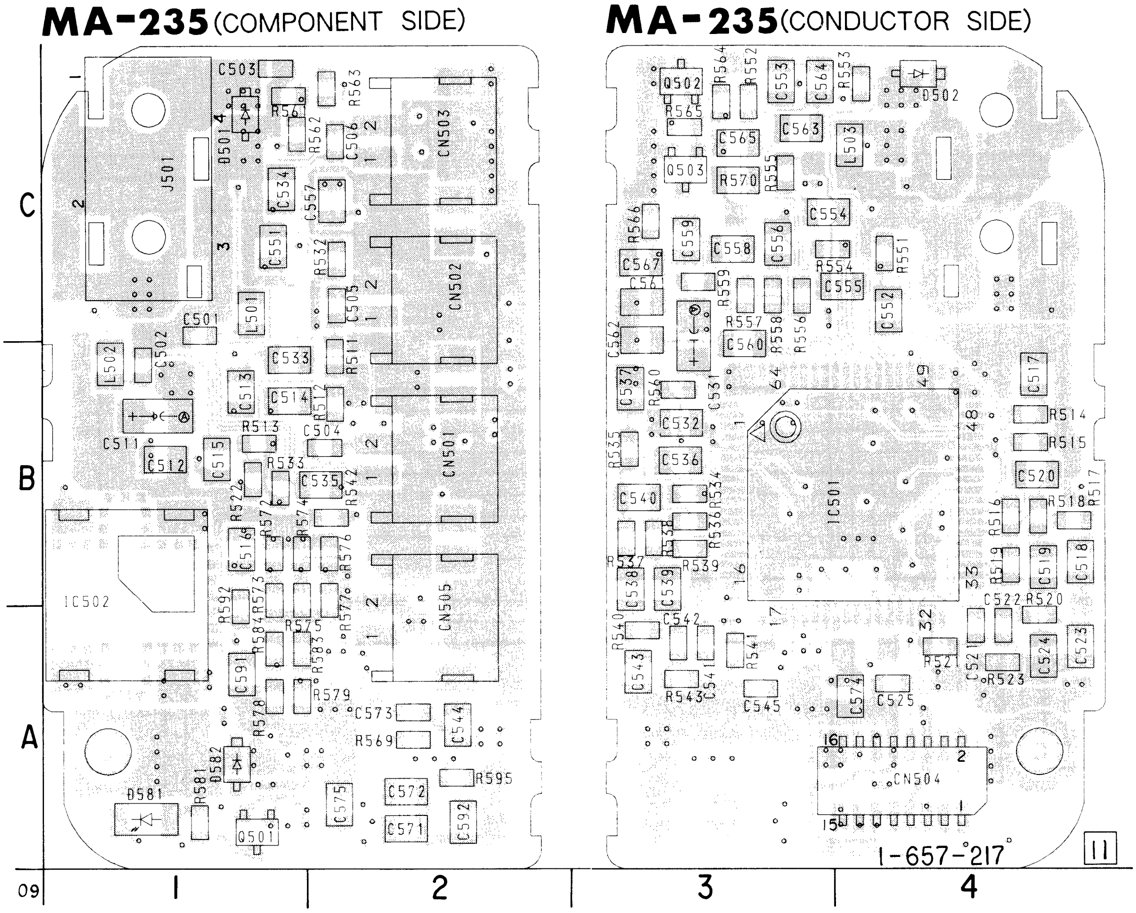
	REC	REC/PB	PB
Drum servo (speed and phase)		⋙	
Capstan servo (speed and phase)		⋙	

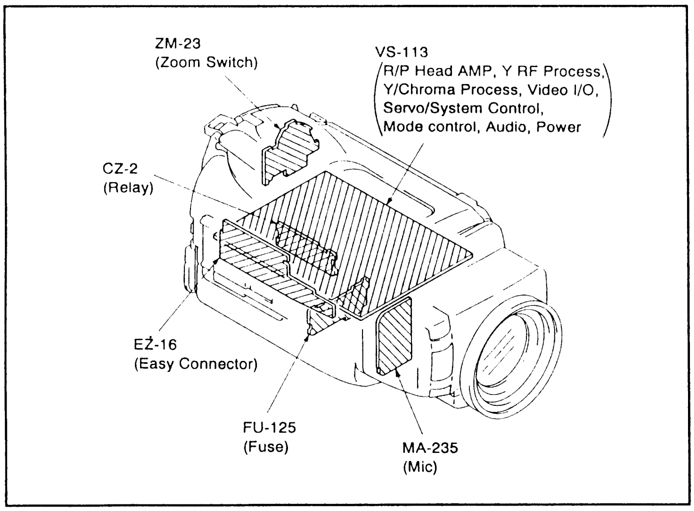

10
11
12
13
14
15
16
17
(SEE PAGE 4-42)
(SEE PAGE 4-45)
(SEE PAGE 4-47)
(SEE PAGE 4-52)
(SEE PAGE 4-53)
(SEE PAGE 4-55)
(SEE PAGE 4-59)
(SEE PAGE 4-63)
TO VS-113 BOARD (1/8)
㉗
RP 4.7V
VIDEO 4.7V
SS 3.5V
REG GND
TO VS-113 BOARD (2/8)
㉘
VIDEO 4.7V
REG GND
TO VS-113 BOARD (3/8)
㉙
VIDEO 4.7V
VIDEO 4.9V
REG GND
TO VS-113 BOARD (4/8)
㉚
VIDEO 4.7V
SS 3.5V
VIDEO 4.9V
REG GND
TO VS-113 BOARD (4/8)
㉛
BL UNREG
BL GND
EVF 4.9V
EVF 15V
TO VS-113 BOARD (5/8)
㉜
VTR UNREG
VIDEO 4.7V
SS 3.5V
REG GND
CAP VS
MT 5V
CAP ERROR
DRUM ERROR
MT GND
DRUM VS
TO VS-113 BOARD (6/8)
㉝
VTR UNREG
VIDEO 4.7V
SS 3.5V
D 3.5V
D 4.9V
CAM 4.9V
CAM 15V
CAM GND
CAM -8.5V
CAM DD ON
REG GND
MT 5V
VTR DD ON
MT GND
TO VS-113 BOARD (7/8)
㉞
AUDIO 4.7V
SS 3.5V
D 4.9V
REG GND
AU -8.5V
MT 5V
L959 4.7µH :NLC3225
C989 10 6.3V :TA-B
L960 4.7µH :NLC3225
C990 10 6.3V :TA-B
L961 4.7µH :NLC3225
C991 10 6.3V :TA-B
CL958
L963 4.7µH :NLC3225
C993 10 6.3V :TA-B
L964 4.7µH :NLC3225
C994 10 6.3V :TA-B
L962 4.7µH :NLC3225
C992 10 6.3V :TA-B
L971 4.7µH :NLC3225
(A-11) Q969 XP4111-TXE CAM DD SWITCH
C996 10 6.3V :TA-B
EIAJ
0
-7.5
R938 0
14.8
14.8
14.8
0
(A-11) Q970 UN9210-QRS-(TXE) SWITCH
15
4.8
Q968 (B-12) XP4211-TXE CAM DD SWITCH
4.8
-7.5
0
-7.6
EIAJ
L967 220µH :NLC3225
C976 1 20V :TA-A
R971 47k
R972 18k
LN0951
LN0952
LN0953
LN0954
LN0955
LN0956
LN0957
LN0958
(C-10) Q971 XP4401
R998 3.3k
-0.6
R995 22k 0.5%
0
C997 10 16V :TA-B
Q971, 972
-8.5V REG
-9.3
-7.6
EIAJ
R996 5.6k
R997 56k 0.5%
CL963
R999 47k
-9.9
-7.6
Q972 (B-10) 2SD2216
PS951 CCP2E20 0.8A
C988 10 6.3V :TA-B
ON1
ERR1
ERR2

MA-235 (MIC) PRINTED WIRING BOARD

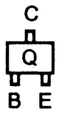
— Ref. No. MA-235 BOARD: 1000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.


MA-235 (COMPONENT SIDE)
MA-235 (CONDUCTOR SIDE)
C
B
A
09
1
2
3
4
J501
IC502
IC501
CN501
CN502
CN503
CN504
CN505
D501
D502
D581
D582
Q501
Q502
Q503
L501
L502
L503
1-657-217
11


ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process,
Y/Chroma Process, Video I/O,
Servo/System Control,
Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

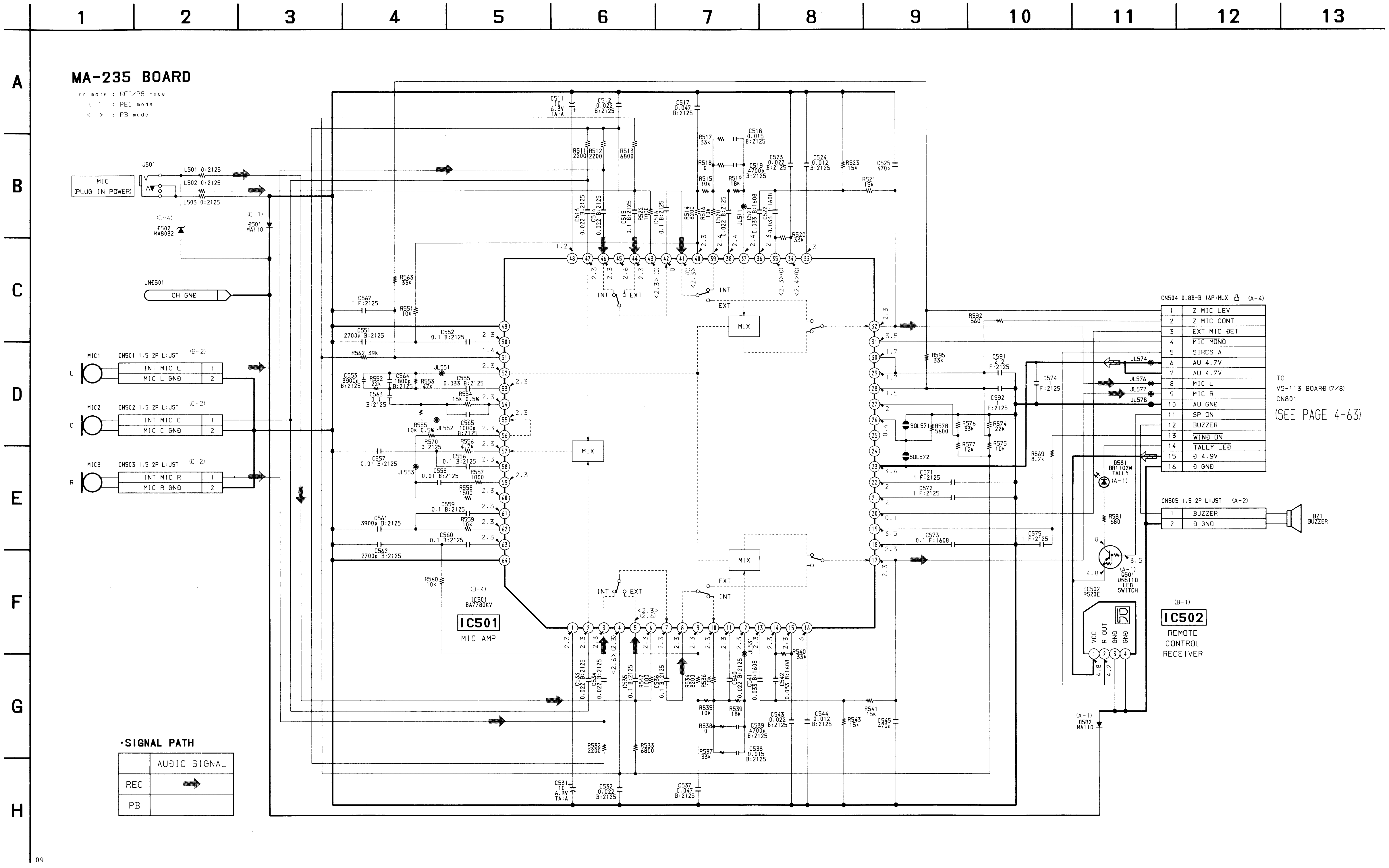


MA-235 BOARD

C511	B-1
C512	B-1
C513	B-1
C514	B-1
C515	B-1
C516	B-1
C517	B-4
C518	B-4
C519	B-4
C520	B-4
C521	A-4
C522	A-4
C523	A-4
C524	A-4
C525	A-4
C531	B-3
C532	B-3
C533	B-1
C534	C-1
C535	B-2
C536	B-3
C537	B-3
C538	B-3
C539	B-3
C540	B-3
C541	A-3
C542	A-3
C543	A-3
C544	A-2
C545	A-3
C551	C-1
C552	C-4
C553	C-3
C555	C-4
C556	C-3
C557	C-2
C558	C-3
C559	C-3
C560	B-3
C561	C-3
C562	B-3
C563	C-3
C564	C-3
C565	C-3
C567	C-3
C571	A-2
C572	A-2
C573	A-2
C574	A-4
C575	A-2
C591	A-1
C592	A-2
CN501	B-2
CN502	C-2
CN503	C-2
CN504	A-4
CN505	A-2
D501	C-1
D502	C-4
D581	A-1
D582	A-1
IC501	B-4
IC502	B-1
J501	C-1
L501	C-1
L502	B-1
L503	C-4
Q501	A-1
R511	B-2
R512	B-2
R513	B-1
R514	B-4
R515	B-4
R516	B-4
R517	B-4
R518	B-4
R519	B-4
R520	A-4
R521	A-4
R522	B-1
R523	A-4
R532	C-2
R533	B-1
R534	B-3
R535	B-3
R536	B-3
R537	B-3
R538	B-3
R539	B-3
R540	A-3
R541	A-3
R542	B-2
R543	A-3
R551	C-4
R552	C-3
R553	C-4
R554	C-3
R555	C-3
R556	C-3
R557	C-3
R558	C-3
R559	C-3
R560	B-3
R562	C-1
R563	C-2
R569	A-2
R570	C-3
R574	B-1
R575	B-1
R576	B-2
R577	B-2
R578	A-1
R581	A-1
R592	B-1
R595	A-2

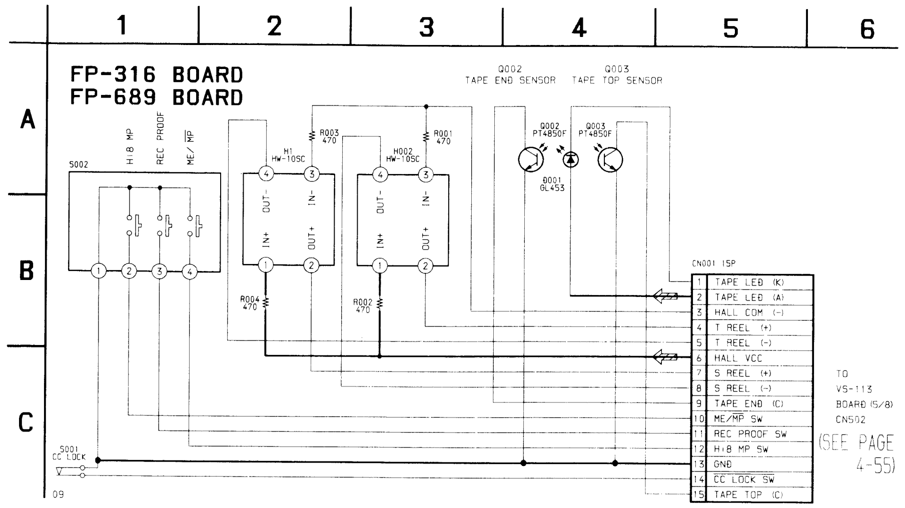
MA-235 (MIC) SCHEMATIC DIAGRAM

— Ref. No. MA-235 BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
MA-235 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
MIC
(PLUG IN POWER)
J501
L501 0:2125
L502 0:2125
L503 0:2125
D502
MA8082
D501
MA110
LND501
CH GND
MIC1
CN501 1.5 2P L:JST
INT MIC L
MIC L GND
MIC2
CN502 1.5 2P L:JST
INT MIC C
MIC C GND
MIC3
CN503 1.5 2P L:JST
INT MIC R
MIC R GND
L
C
R
IC501
BA7780KV
MIC AMP
MIX
INT
EXT
CN504 0.8B-B 16P:MLX (A-4)
1 Z MIC LEV
2 Z MIC CONT
3 EXT MIC DET
4 MIC MONO
5 SIRCS A
6 AU 4.7V
7 AU 4.7V
8 MIC L
9 MIC R
10 AU GND
11 SP ON
12 BUZZER
13 WIND ON
14 TALLY LED
15 D 4.9V
16 D GND
TO
VS-113 BOARD (7/8)
CN801
(SEE PAGE 4-63)
CN505 1.5 2P L:JST (A-2)
1 BUZZER
2 D GND
BZ1
BUZZER
D581
BR1102W
TALLY
R581
680
Q501
UN5110
LED
SWITCH
IC502
RS20E
IC502
REMOTE
CONTROL
RECEIVER
VCC
R OUT
GND
GND
D582
MA110
JL574
JL576
JL577
JL578
SOL571
SOL572
·SIGNAL PATH
AUDIO SIGNAL
REC
PB
09

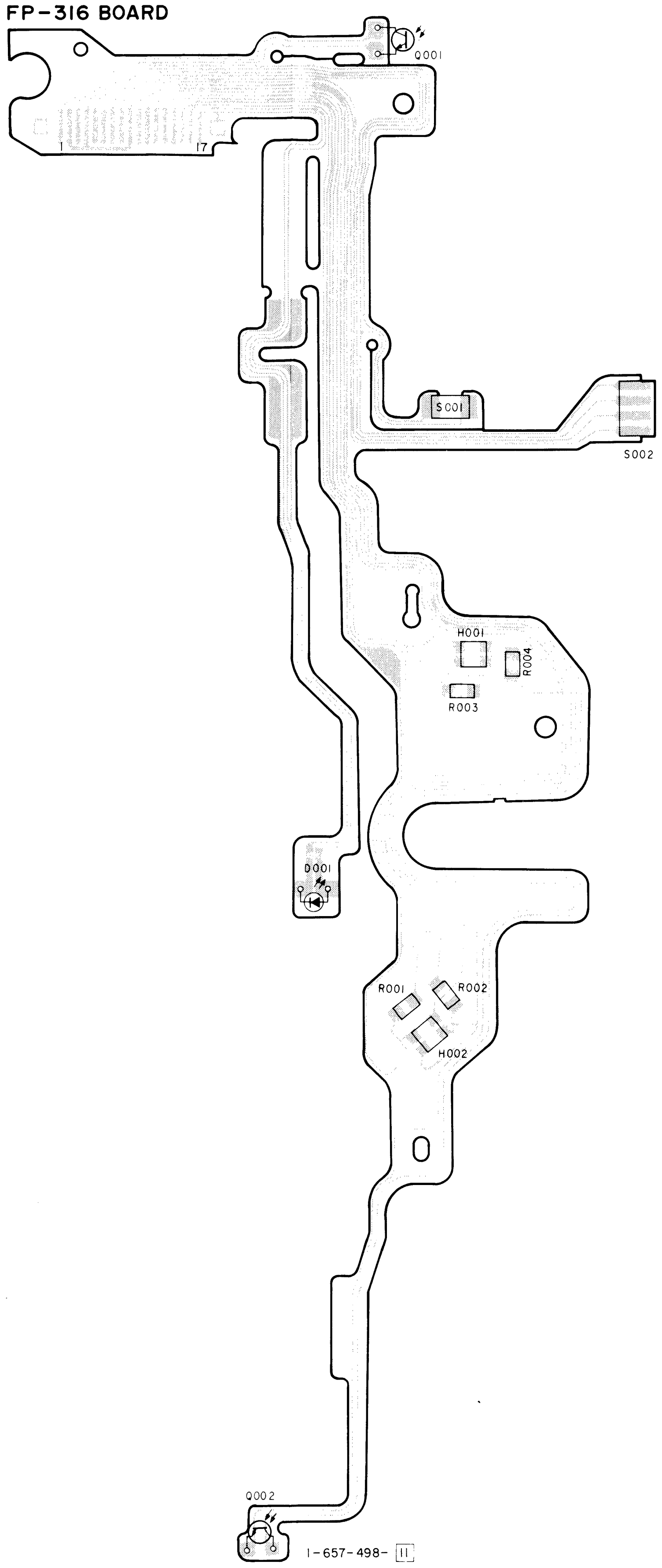
FP-316, FP-689 (TAPE SENSOR) SCHEMATIC DIAGRAM

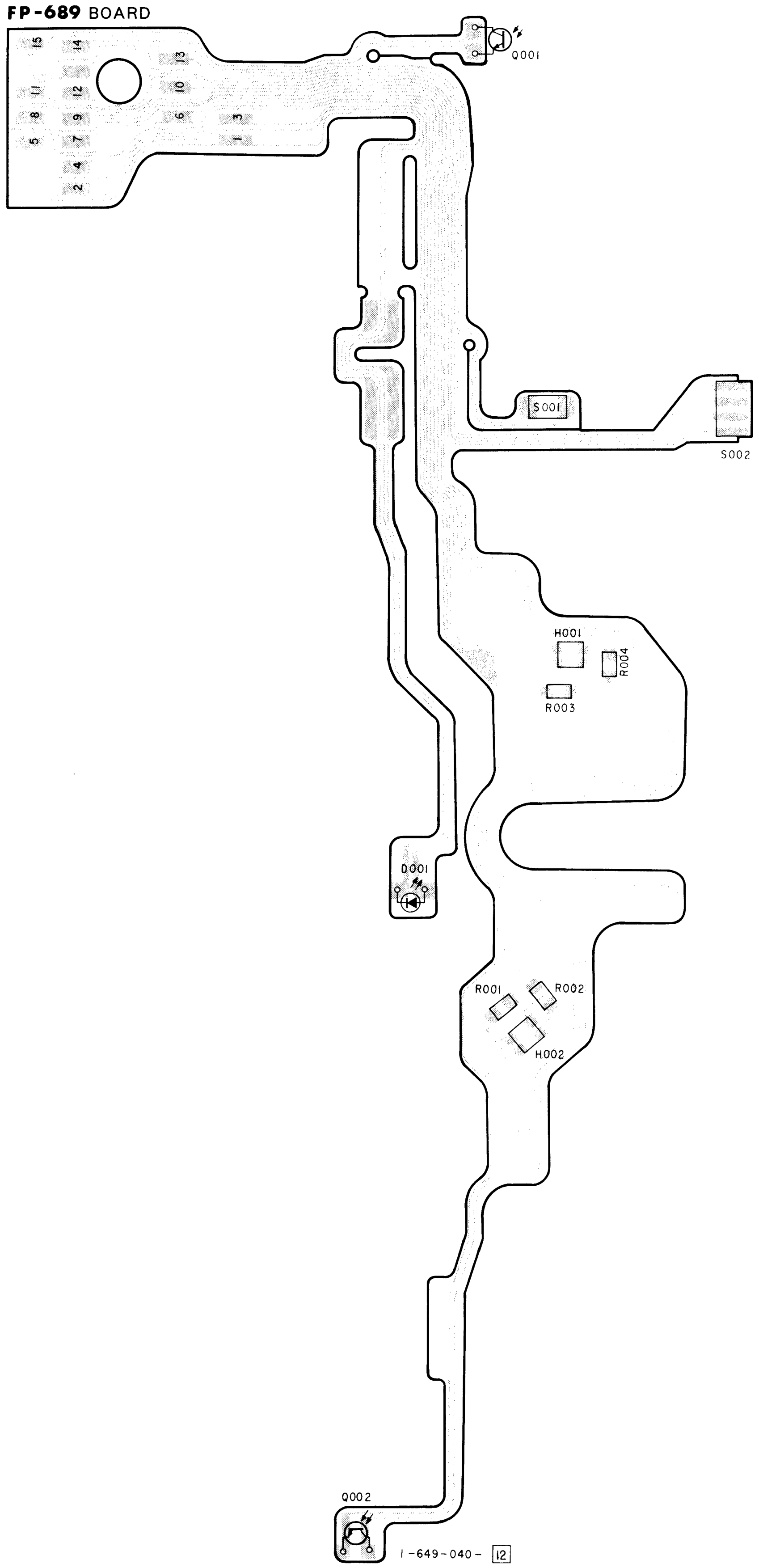
— Ref. No. FP-316, FP-689 BOARD: 5000 series —


1
2
3
4
5
6
A
B
C
FP-316 BOARD
FP-689 BOARD
Q002
TAPE END SENSOR
Q003
TAPE TOP SENSOR
S002
Hi8 MP
REC PROOF
ME/$\overline{MP}$
H1
HW-105C
H002
HW-105C
R003
470
R001
470
R004
470
R002
470
OUT-
IN-
IN+
OUT+
Q002
PT4850F
Q003
PT4850F
D001
GL453
CN001 15P
1 TAPE LED (K)
2 TAPE LED (A)
3 HALL COM (-)
4 T REEL (+)
5 T REEL (-)
6 HALL VCC
7 S REEL (+)
8 S REEL (-)
9 TAPE END (C)
10 ME/$\overline{MP}$ SW
11 REC PROOF SW
12 Hi8 MP SW
13 GND
14 CC LOCK SW
15 TAPE TOP (C)
TO
VS-113
BOARD (5/8)
CN502
(SEE PAGE
4-55)
S001
CC LOCK
09

FP-316, FP-689 (TAPE SENSOR) PRINTED WIRING BOARD

— Ref. No. FP-316, FP-689 BOARD: 5000 series —


FP-316 BOARD
1
17
Q001
S001
S002
H001
R004
R003
D001
R001
R002
H002
Q002
1-657-498- 11

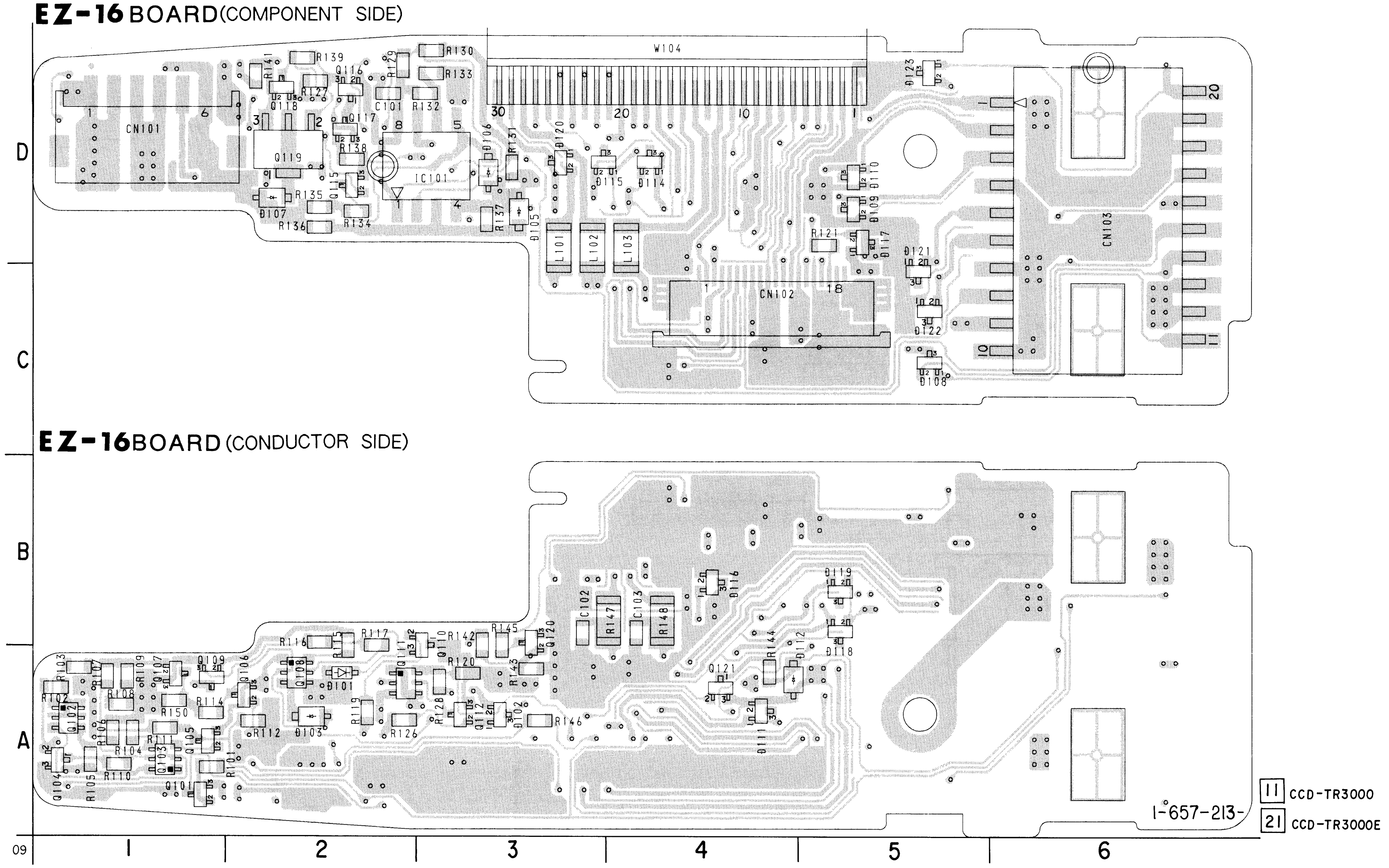

FP-689 BOARD
15
14
13
11
12
10
8
9
6
3
5
7
1
4
2
Q001
S001
S002
H001
R004
R003
D001
R001
R002
H002
Q002
1-649-040- 12

EZ-16 (EASY CONNECTOR) PRINTED WIRING BOARD

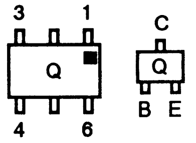
— Ref. No. EZ-16 BOARD: 1000 series —

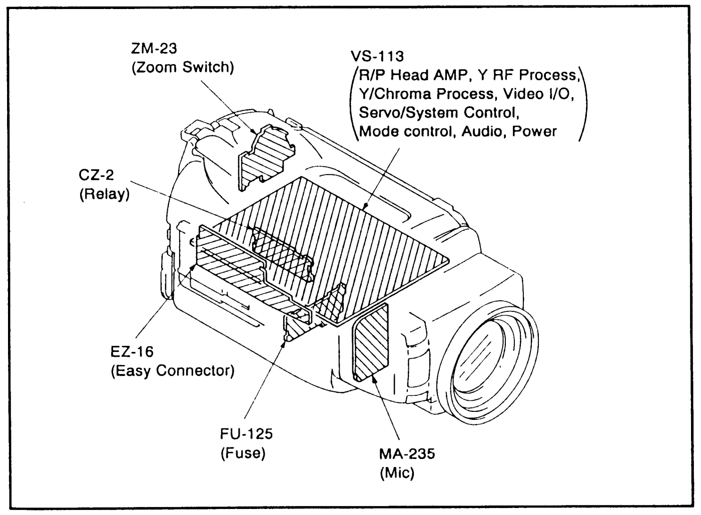
There are few cases that the part isn't mounted in this model is printed on this diagram.

EZ-16 BOARD	
C101	D-2
C102	B-3
C103	B-4
CN101	D-1
CN102	C-4
CN103	D-6
D101	A-2
D102	A-3
D103	A-2
D105	D-3
D106	D-3
D108	C-5
D109	D-5
D110	D-5
D111	A-4
D112	A-4
D114	D-4
D115	D-3
D116	B-4
D117	D-5
D118	B-5
D119	B-5
D120	D-3
D123	D-5
IC101	D-3
L101	D-3
L102	D-3
L103	D-4
Q101	A-1
Q102	A-1
Q103	A-1
Q104	A-1
Q105	A-1
Q106	A-2
Q108	A-2
Q109	A-1
Q110	A-3
Q111	A-2
Q112	A-3
Q115	D-2
Q120	B-3
Q121	A-4
R101	A-1
R102	A-1
R103	A-1
R104	A-1
R105	A-1
R106	A-1
R107	A-1
R108	A-1
R109	A-1
R110	A-1
R111	A-1
R112	A-2
R114	A-1
R115	B-2
R116	B-2
R117	B-2
R119	A-2
R120	A-3
R121	D-5
R126	A-2
R128	A-3
R129	D-2
R130	D-3
R131	D-3
R132	D-3
R133	D-3
R134	D-2
R135	D-2
R136	D-2
R137	D-3
R142	B-3
R143	A-3
R144	A-4
R145	B-3
R146	A-3
R147	B-3
R148	B-4
R150	A-1
W104	D-4

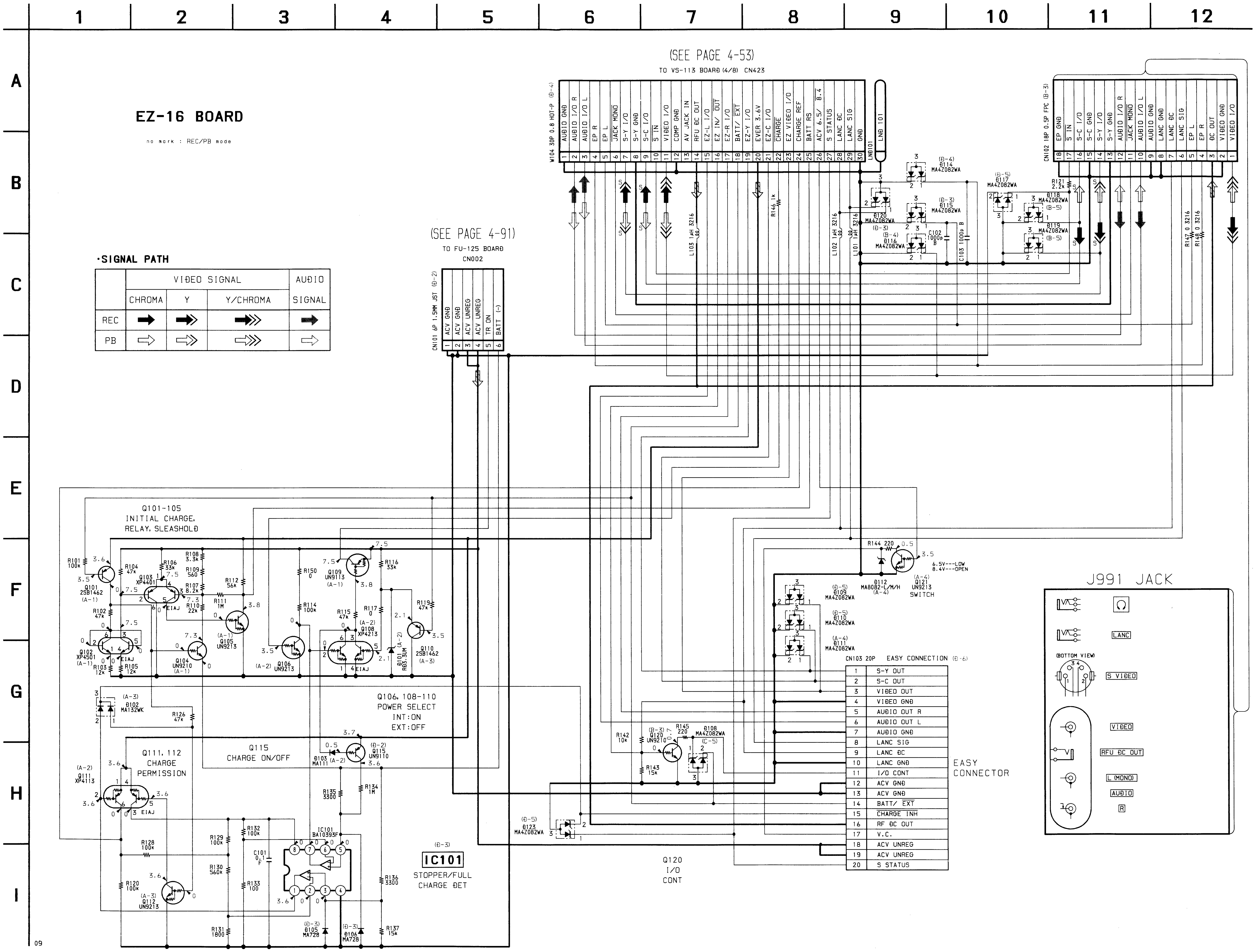

EZ-16 BOARD(COMPONENT SIDE)
EZ-16 BOARD (CONDUCTOR SIDE)
W104
CN101
CN102
CN103
IC101
L101
L102
L103
1-657-213-
11 CCD-TR3000
21 CCD-TR3000E
D
C
B
A
09
1
2
3
4
5
6

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor



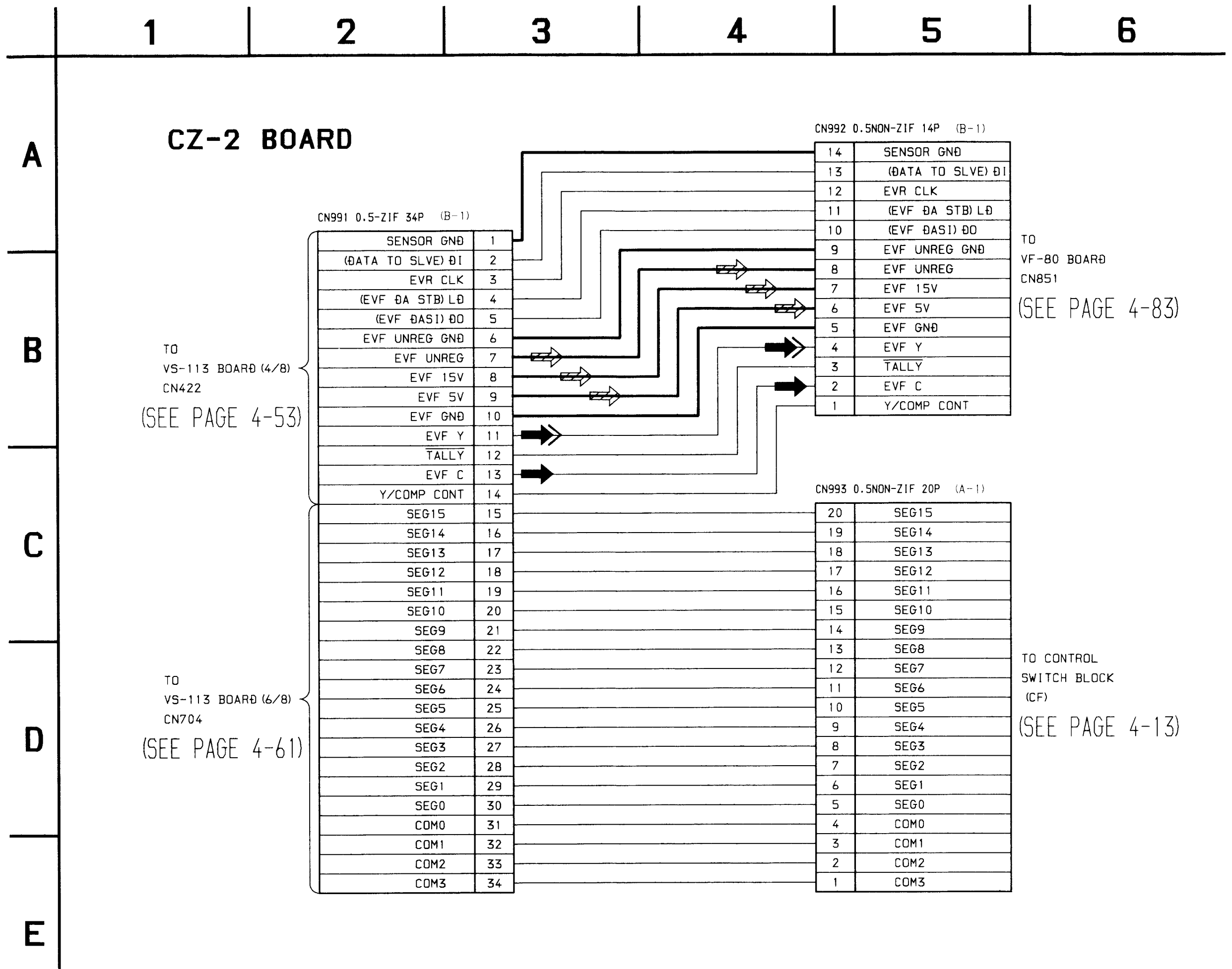

ZM-23
(Zoom Switch)
VS-113
(R/P Head AMP, Y RF Process, Y/Chroma Process, Video I/O, Servo/System Control, Mode control, Audio, Power)
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)

EZ-16 (EASY CONNECTOR) SCHEMATIC DIAGRAM — Ref. No. EZ-16 BOARD: 1000 series —


EZ-16 BOARD
no mark : REC/PB mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
(SEE PAGE 4-53)
TO VS-113 BOARD (4/8) CN423
W104 30P 0.8 HOT-P (B-4)
AUDIO GND
AUDIO I/O R
AUDIO I/O L
EP R
EP L
JACK MONO
S-Y I/O
S-Y GND
S-C I/O
S IN
VIDEO I/O
COMP GND
AV JACK IN
RFU DC OUT
EZ-L I/O
EZ IN/ OUT
EZ-R I/O
BATT/ EXT
EZ-Y I/O
EVER 3.6V
EZ-C I/O
CHARGE
EZ VIDEO I/O
CHARGE REF
BATT RS
ACV 6.5/ 8.4
S STATUS
LANC DC
LANC SIG
GND
LND101
LND 101
(SEE PAGE 4-91)
TO FU-125 BOARD
CN002
CN101 6P 1.5MM JST (D-2)
ACV GND
ACV GND
ACV UNREG
ACV UNREG
TR ON
BATT (-)
CN102 18P 0.5P FPC (B-3)
EP GND
S IN
S-C I/O
S-C GND
S-Y I/O
S-Y GND
AUDIO I/O R
JACK MONO
AUDIO I/O L
AUDIO GND
LANC GND
LANC DC
LANC SIG
EP L
EP R
DC OUT
VIDEO GND
VIDEO I/O
D114 MA4Z082WA
D115 MA4Z082WA
D116 MA4Z082WA
D117 MA4Z082WA
D118 MA4Z082WA
D119 MA4Z082WA
D120 MA4Z082WA
C102 1000p B
C103 1000p B
L101 1µH 3216
L102 1µH 3216
L103 1µH 3216
R146 1k
R121 2.2k
R147 0 3216
R148 0 3216
Q101-105
INITIAL CHARGE,
RELAY, SLEASHOLD
Q101 2SB1462 (A-1)
Q102 XP4501 (A-1)
Q103 XP4401
Q104 UN9210 (A-1)
Q105 UN9213
Q106 UN9213 (A-2)
Q108 XP4213 (A-2)
Q109 UN9113 (A-1)
Q110 2SB1462 (A-3)
D101 RD3.3M (A-2)
R101 100k
R102 47k
R103 12k
R104 47k
R105 12k
R106 33k
R107 8.2k
R108 3.3k
R109 560
R110 22k
R111 1M
R112 56k
R114 100k
R115 47k
R116 33k
R117 0
R119 47k
R150 0
Q106, 108-110
POWER SELECT
INT:ON
EXT:OFF
D102 MA132WK (A-3)
R126 47k
Q111, 112
CHARGE
PERMISSION
Q111 XP4113 (A-2)
Q112 UN9213 (A-3)
Q115
CHARGE ON/OFF
Q115 UN9110 (D-2)
D103 MA111 (A-2)
R128 100k
R120 100k
R129 100k
R130 560k
R131 1800
R132 100k
R133 100
R134 1M
R135 3300
R136 3300
R137 15k
C101 0.1 F
IC101 BA10393F
D105 MA728 (D-3)
D106 MA728 (D-3)
(D-3)
IC101
STOPPER/FULL
CHARGE DET
D123 MA4Z082WA (D-5)
Q120
I/O
CONT
Q120 UN9210 (B-3)
R142 10k
R143 15k
R145 220
D108 MA4Z082WA (C-5)
R144 220
D112 MA8082-L/M/H (A-4)
Q121 UN9213 (A-4)
SWITCH
6.5V---LOW
8.4V---OPEN
D109 MA4Z082WA (D-5)
D110 MA4Z082WA (D-5)
D111 MA4Z082WA (A-4)
CN103 20P EASY CONNECTION (D-6)
1 S-Y OUT
2 S-C OUT
3 VIDEO OUT
4 VIDEO GND
5 AUDIO OUT R
6 AUDIO OUT L
7 AUDIO GND
8 LANC SIG
9 LANC DC
10 LANC GND
11 I/O CONT
12 ACV GND
13 ACV GND
14 BATT/ EXT
15 CHARGE INH
16 RF DC OUT
17 V.C.
18 ACV UNREG
19 ACV UNREG
20 S STATUS
EASY
CONNECTOR
J991 JACK
LANC
(BOTTOM VIEW)
S VIDEO
VIDEO
RFU DC OUT
L (MONO)
AUDIO
R
09

CZ-2 (RELAY) SCHEMATIC DIAGRAM

— Ref. No. CZ-2 BOARD: 1000 series —


1
2
3
4
5
6
A
B
C
D
E
F
CZ-2 BOARD
CN992 0.5NON-ZIF 14P (B-1)
14 SENSOR GND
13 (DATA TO SLVE) DI
12 EVR CLK
11 (EVF DA STB) LD
10 (EVF DASI) DO
9 EVF UNREG GND
8 EVF UNREG
7 EVF 15V
6 EVF 5V
5 EVF GND
4 EVF Y
3 TALLY
2 EVF C
1 Y/COMP CONT
TO
VF-80 BOARD
CN851
(SEE PAGE 4-83)
CN991 0.5-ZIF 34P (B-1)
SENSOR GND 1
(DATA TO SLVE) DI 2
EVR CLK 3
(EVF DA STB) LD 4
(EVF DASI) DO 5
EVF UNREG GND 6
EVF UNREG 7
EVF 15V 8
EVF 5V 9
EVF GND 10
EVF Y 11
TALLY 12
EVF C 13
Y/COMP CONT 14
SEG15 15
SEG14 16
SEG13 17
SEG12 18
SEG11 19
SEG10 20
SEG9 21
SEG8 22
SEG7 23
SEG6 24
SEG5 25
SEG4 26
SEG3 27
SEG2 28
SEG1 29
SEG0 30
COM0 31
COM1 32
COM2 33
COM3 34
TO
VS-113 BOARD (4/8)
CN422
(SEE PAGE 4-53)
TO
VS-113 BOARD (6/8)
CN704
(SEE PAGE 4-61)
CN993 0.5NON-ZIF 20P (A-1)
20 SEG15
19 SEG14
18 SEG13
17 SEG12
16 SEG11
15 SEG10
14 SEG9
13 SEG8
12 SEG7
11 SEG6
10 SEG5
9 SEG4
8 SEG3
7 SEG2
6 SEG1
5 SEG0
4 COM0
3 COM1
2 COM2
1 COM3
TO CONTROL
SWITCH BLOCK
(CF)
(SEE PAGE 4-13)

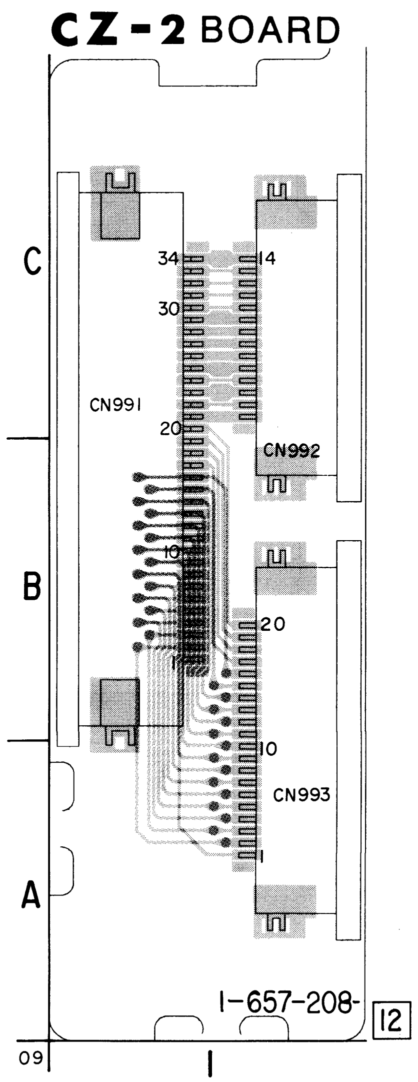
·SIGNAL PATH

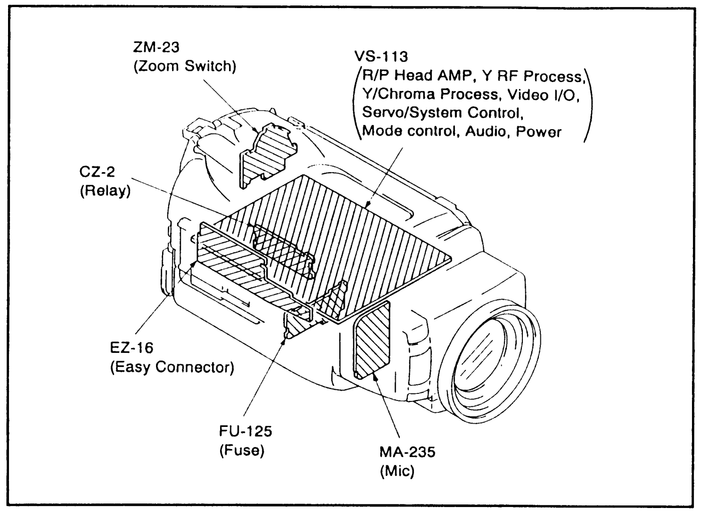
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	
PB			

09

CZ-2 (RELAY) PRINTED WIRING BOARD

— Ref. No. CZ-2 BOARD: 1000 series —


CZ-2 BOARD
C
B
A
34
30
20
10
14
CN991
CN992
20
10
1
CN993
1-657-208-12
09


ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process,
Y/Chroma Process, Video I/O,
Servo/System Control,
Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)

CZ-2 BOARD

CN991	B-1
CN992	B-1
CN993	A-1

- **For printed wiring board.**
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- ○ : Through hole is omitted.

FP-264 (FINDER SENSOR), LB-41 (BACK LIGHT), VF-80 (COLOR EVF) PRINTED WIRING BOARD

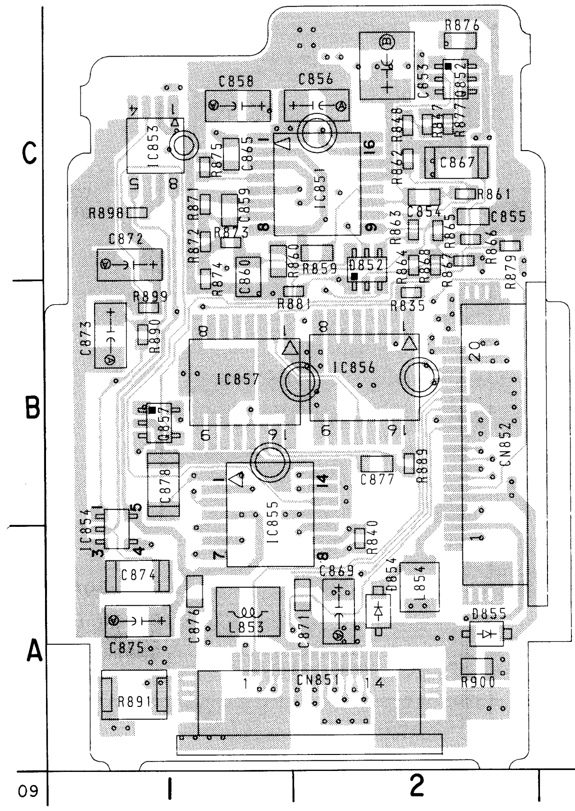
— Ref. No. FP-264 BOARD: 6000 series, LB-41, VF-80 BOARD: 4000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

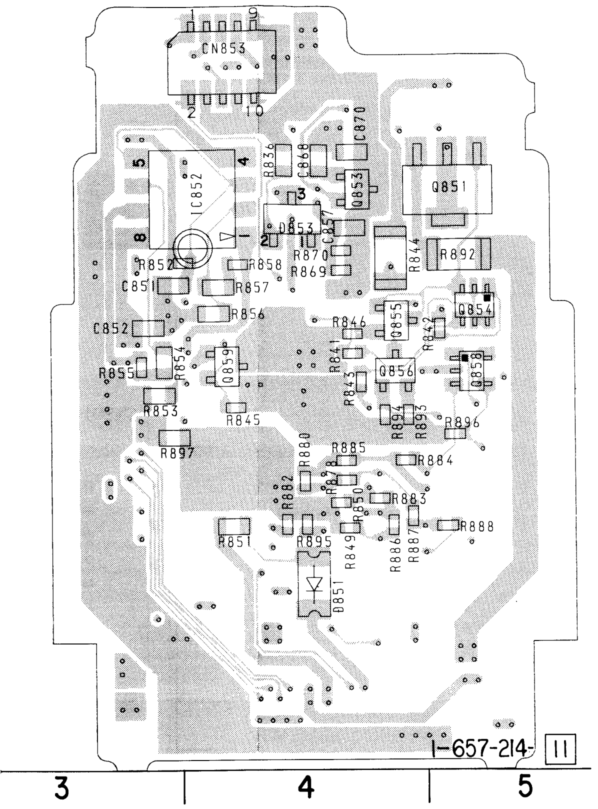
LB-41	BOARD
BL801	B-4
C801	A-2
C802	A-2
C803	B-3
C804	B-1
C805	B-1
C806	B-1
CN801	B-1
D801	B-3
L801	A-2
L802	A-2
Q801	A-1
R802	B-3
T801	B-1

VF-80	BOARD		
C851	B-3	R842	B-5
C852	B-3	R843	B-4
C853	C-2	R844	C-4
C854	C-2	R845	B-4
C855	C-2	R846	B-4
C856	C-2	R847	C-2
C857	C-4	R849	A-4
C858	C-1	R850	B-4
C859	C-1	R851	A-4
C860	C-1	R852	C-3
C865	C-1	R853	B-3
C867	C-2	R854	B-3
C868	C-4	R855	B-3
C869	A-2	R856	B-4
C870	C-4	R857	B-4
C871	A-2	R858	C-4
C872	C-1	R859	C-2
C873	B-1	R860	C-1
C874	A-1	R861	C-2
C875	A-1	R862	C-2
C876	A-1	R863	C-2
C877	B-2	R864	C-2
C878	B-1	R865	C-2
		R867	C-2
CN851	A-2	R868	C-2
CN852	B-2	R869	C-4
CN853	C-4	R870	C-4
		R871	C-1
D851	A-4	R872	C-1
D852	C-2	R873	C-1
D853	C-4	R874	B-1
		R875	C-1
IC851	C-2	R876	C-2
IC852	C-4	R877	C-2
IC853	C-1	R878	B-4
IC854	A-1	R879	C-2
IC855	B-1	R880	B-4
IC857	B-1	R881	B-2
		R882	A-4
L853	A-1	R883	B-4
L854	A-2	R884	B-4
		R885	B-4
Q851	C-5	R886	A-4
Q852	C-2	R887	B-4
Q853	C-4	R888	A-5
Q854	B-5	R889	B-2
Q855	B-4	R890	B-1
Q856	B-4	R891	A-1
Q857	B-1	R892	C-5
Q858	B-5	R893	B-4
Q859	B-4	R894	B-4
		R895	A-4
R835	B-2	R896	B-5
R836	C-4	R897	B-3
R840	A-2	R898	C-1
R841	B-4	R899	B-1

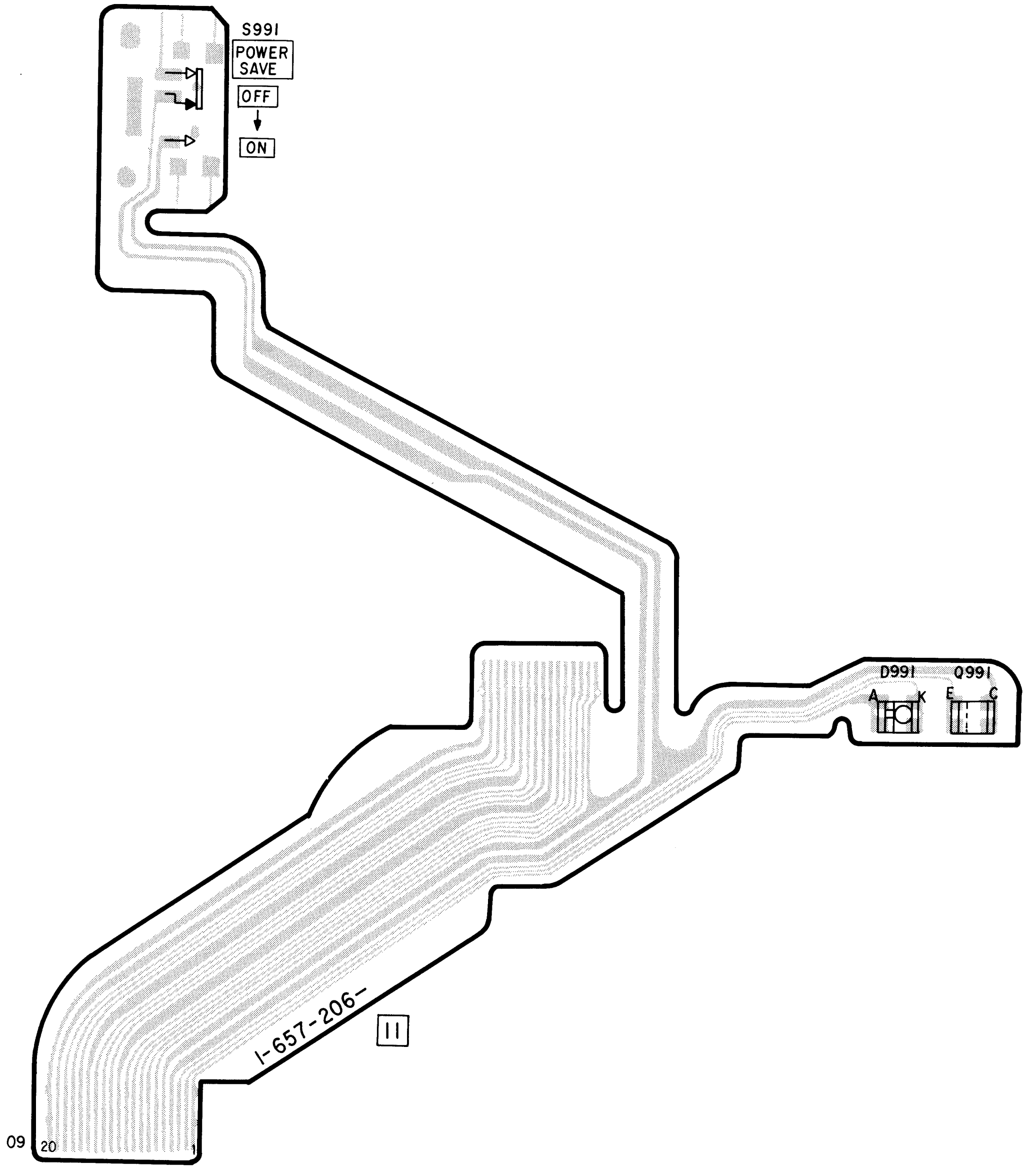
VF-80 BOARD (COMPONENT SIDE)


C
B
A
09
1
2
C858
C856
C853
IC851
IC857
IC856
IC855
IC854
C872
C873
C874
C875
C876
C877
C878
C867
C855
R898
R899
R890
R891
R876
R861
CN851
CN852
L853
L854
D855
R900
R840
C869

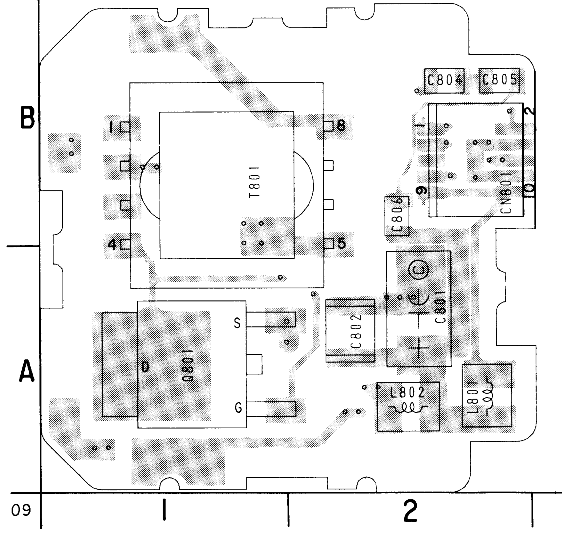
VF-80 BOARD (CONDUCTOR SIDE)


3
4
5
CN853
IC852
Q851
Q853
Q854
Q855
Q856
Q858
Q859
D851
C851
C852
C857
C868
C870
R892
R884
R888
1-657-214-
11

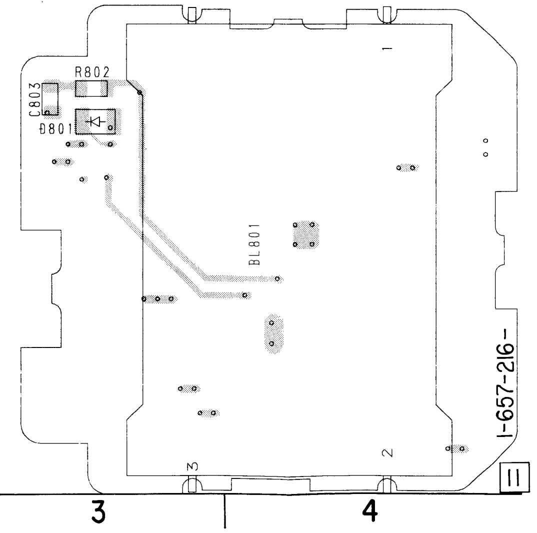
FP-264 FLEXIBLE BOARD

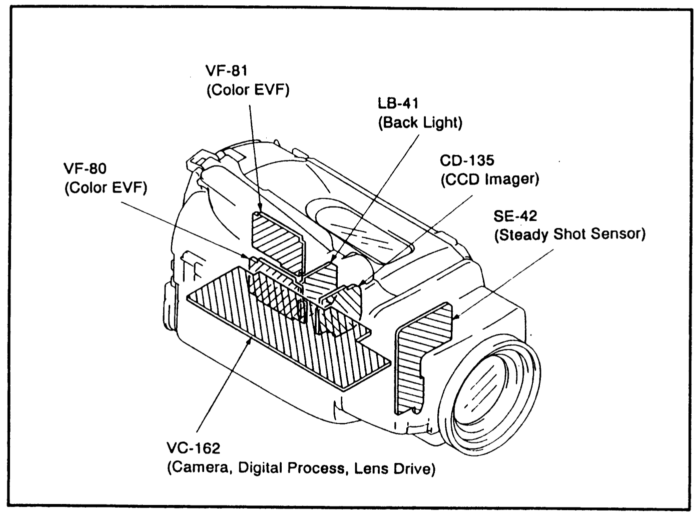

S991
POWER SAVE
OFF
ON
D991
Q991
A
K
E
C
1-657-206-
11
09
20
1

LB-41 BOARD (COMPONENT SIDE)

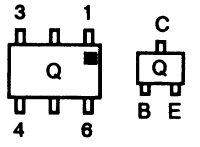

B
A
09
1
2
T801
C804
C805
C806
CN801
C801
C802
Q801
L802
L801
D
S
G

LB-41 BOARD (CONDUCTOR SIDE)


3
4
R802
C803
D801
BL801
1-657-216-
11

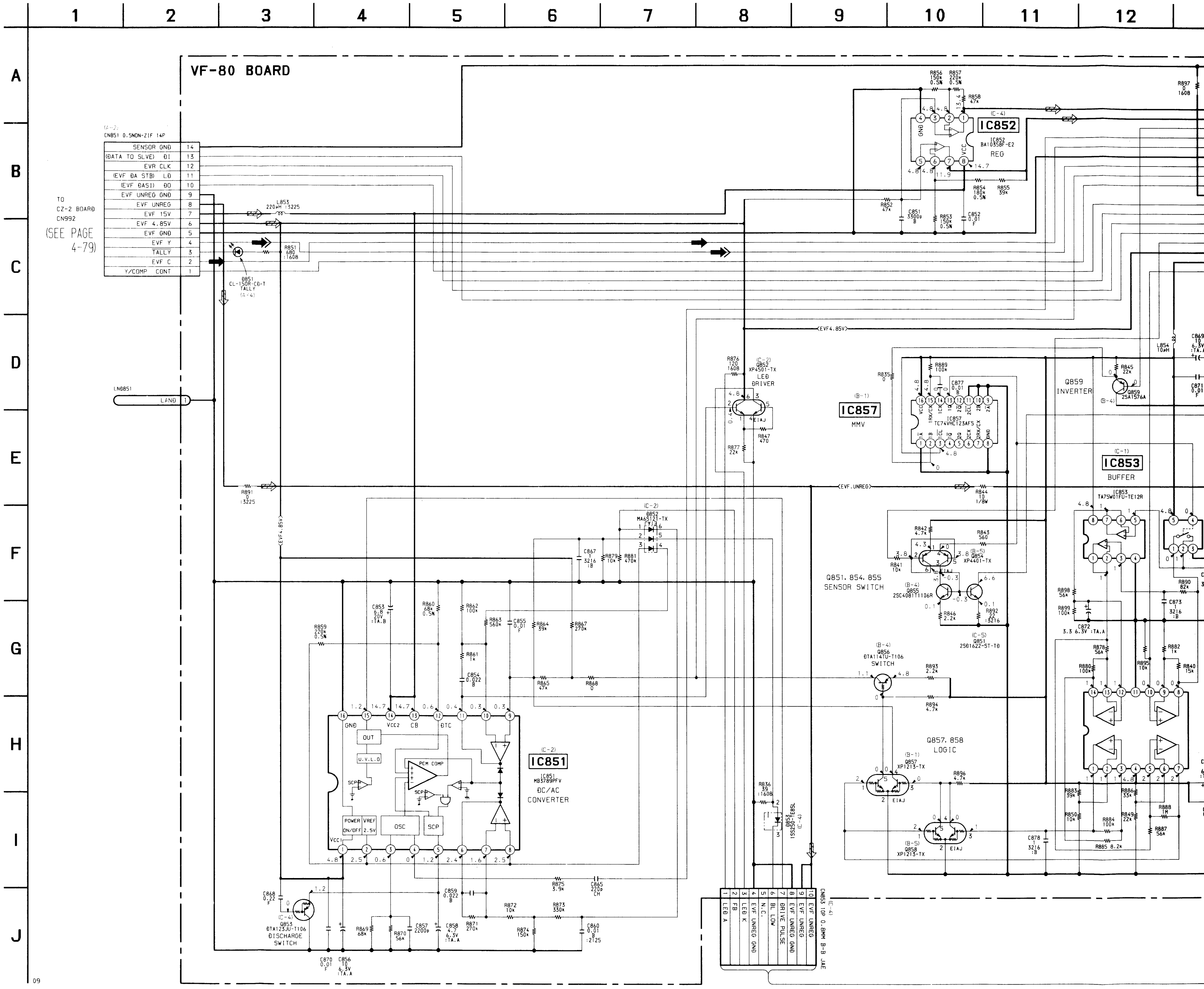

VF-81
(Color EVF)
LB-41
(Back Light)
VF-80
(Color EVF)
CD-135
(CCD Imager)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

- **For printed wiring boards.**
- LB-41 and VF-80 boards are four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor



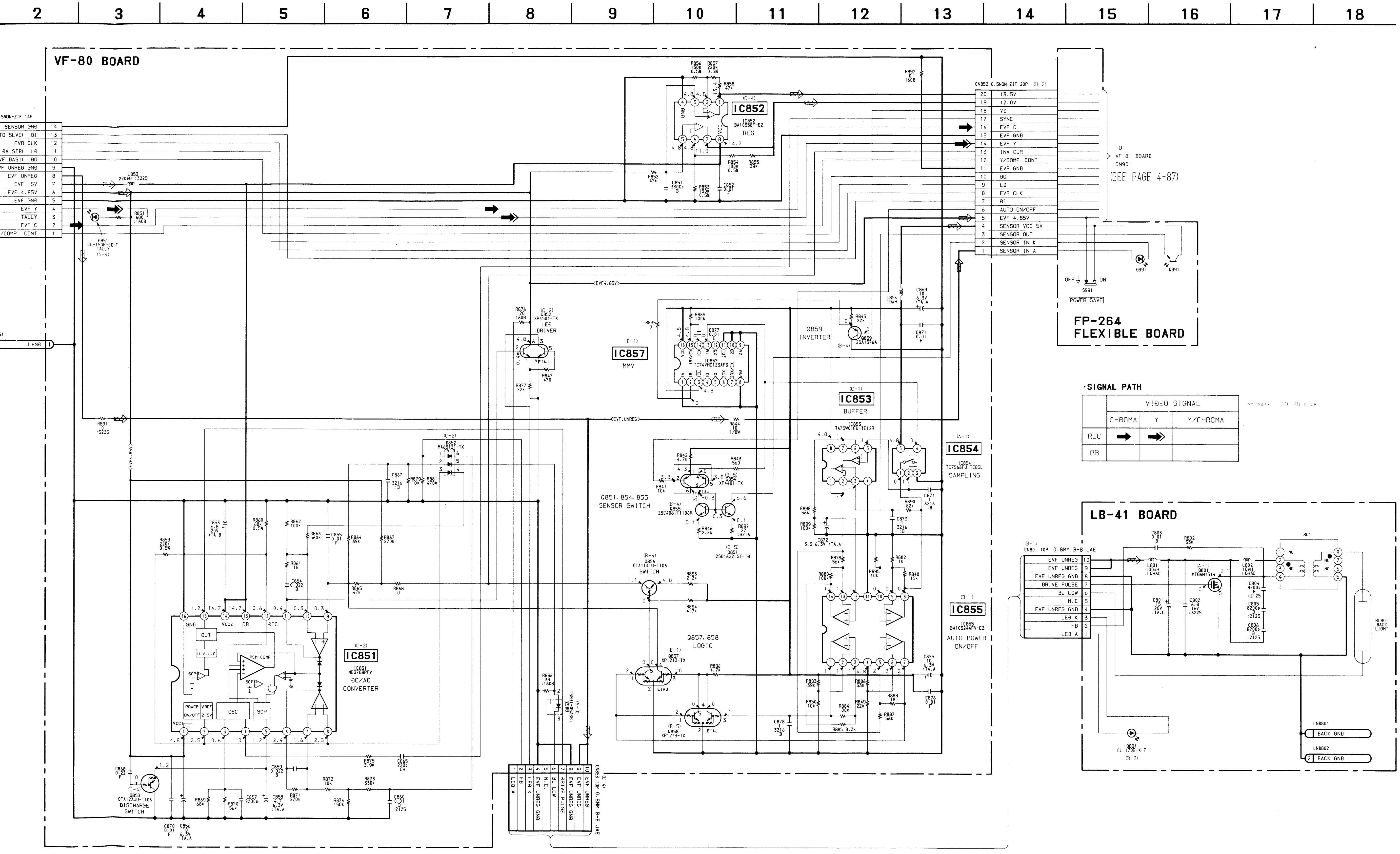
FP-264 (FINDER SENSOR), LB-41 (BACK LIGHT), VF-80 (COLOR EVF) SCHEMATIC DIAGRAM

— Ref. No. FP-264 BOARD: 6000 series, LB-41, VF-80 BOARD: 4000 series —


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
VF-80 BOARD
CN851 0.5NON-Z1F 14P
SENSOR GND
(DATA TO SLVE) DI
EVR CLK
(EVF DA STB) LD
(EVF DAS1) DO
EVF UNREG GND
EVF UNREG
EVF 15V
EVF 4.85V
EVF GND
EVF Y
TALLY
EVF C
Y/COMP CONT
TO
CZ-2 BOARD
CN992
(SEE PAGE
4-79)
L853
220μH
R851
680
D851
CL-150R-CB-T
TALLY
LND851
LAND
R891
0
IC852
BA10358F-E2
REG
IC857
MMV
IC857
TC74VHC123AFS
Q852
XP4501-TX
LED
DRIVER
Q859
INVERTER
Q859
2SA1576A
IC853
BUFFER
IC853
TA75W01FU-TE12R
D852
MA6S121-TX
Q851, 854, 855
SENSOR SWITCH
Q854
XP4401-TX
Q855
2SC4081T106R
Q851
2SB1622-ST-T0
Q856
DTA114TU-T106
SWITCH
Q857, 858
LOGIC
Q857
XP1213-TX
Q858
XP1213-TX
IC851
MB3789PFV
DC/AC
CONVERTER
GND
VCC2
CB
DTC
OUT
U.V.L.O
PCM COMP
SCP
POWER ON/OFF
VREF 2.5V
OSC
VCC1
Q853
DTA123JU-T106
DISCHARGE
SWITCH
EVF4.85V
EVF.UNREG
CN853 10P 0.8MM B-B JAE
LED A
FB
LED K
EVF UNREG GND
N.C.
BL LOW
BRIVE PULSE
EVF UNREG GND
EVF UNREG
EVF UNREG

SENSOR), LB-41 (BACK LIGHT), VF-80 (COLOR EVF) SCHEMATIC DIAGRAM

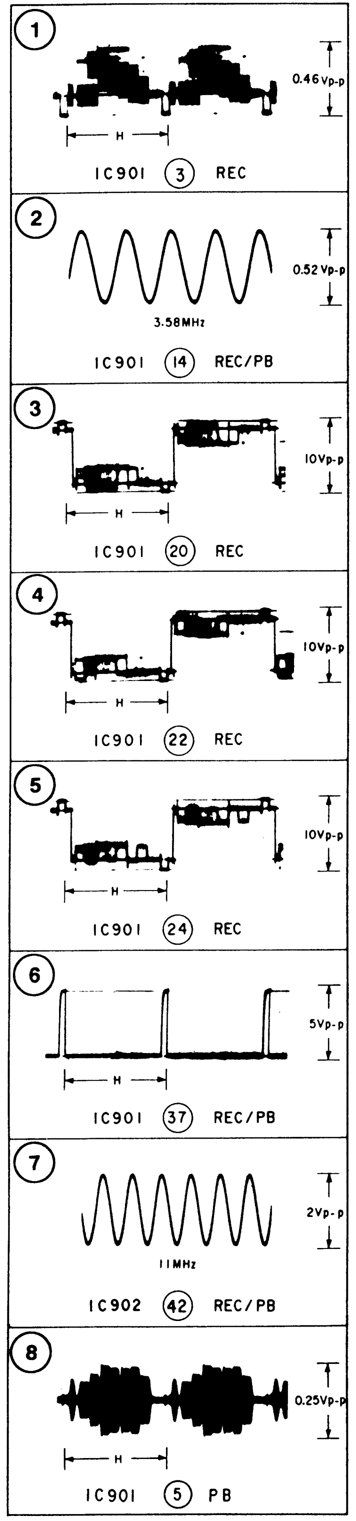
RD: 6000 series, LB-41, VF-80 BOARD: 4000 series —


2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
VF-80 BOARD
IC852
BA10358F-E2
REG
IC857
MMV
TC74VHC123AFS
Q859
INVERTER
2SA1576A
IC853
BUFFER
TA75W01FU-TE12R
IC854
TC7S66FU-TE85L
SAMPLING
Q852
XP4501-TX
LED DRIVER
Q851, 854, 855
SENSOR SWITCH
Q856
DTA114TU-T106
SWITCH
Q857, 858
LOGIC
XP1213-TX
IC855
BA10324AFV-E2
AUTO POWER ON/OFF
IC851
MB3789PFV
DC/AC CONVERTER
Q853
DTA123JU-T106
DISCHARGE SWITCH
D851
CL-150R-CD-T
TALLY
CN852 0.5MM-ZIF 20P
20 13.5V
19 12.0V
18 VD
17 SYNC
16 EVF C
15 EVF GND
14 EVF Y
13 INV CUR
12 Y/COMP CONT
11 EVR GND
10 DO
9 LD
8 EVR CLK
7 DI
6 AUTO ON/OFF
5 EVF 4.85V
4 SENSOR VCC 5V
3 SENSOR OUT
2 SENSOR IN K
1 SENSOR IN A
TO VF-81 BOARD CN901
(SEE PAGE 4-87)
S991
POWER SAVE
OFF
ON
D991
Q991
FP-264
FLEXIBLE BOARD
CN853 10P 0.8MM B-B JAE
1 LED A
2 FB
3 LED K
4 EVF UNREG GND
5 N.C
6 BL LOW
7 DRIVE PULSE
8 EVF UNREG GND
9 EVF UNREG
10 EVF UNREG
LB-41 BOARD
CN801 10P 0.8MM B-B JAE
Q801
MTD6N15T4
T801
BL801
BACK LIGHT
D801
CL-170B-X-T
LND801
BACK GND
LND802
BACK GND
SENSOR GND 14
(TO SLVE) DI 13
EVR CLK 12
(DA STB) LD 11
(F DAS1) DO 10
EVF UNREG GND 9
EVF UNREG 8
EVF 15V 7
EVF 4.85V 6
EVF GND 5
EVF Y 4
TALLY 3
EVF C 2
Y/COMP CONT 1
LAND 1

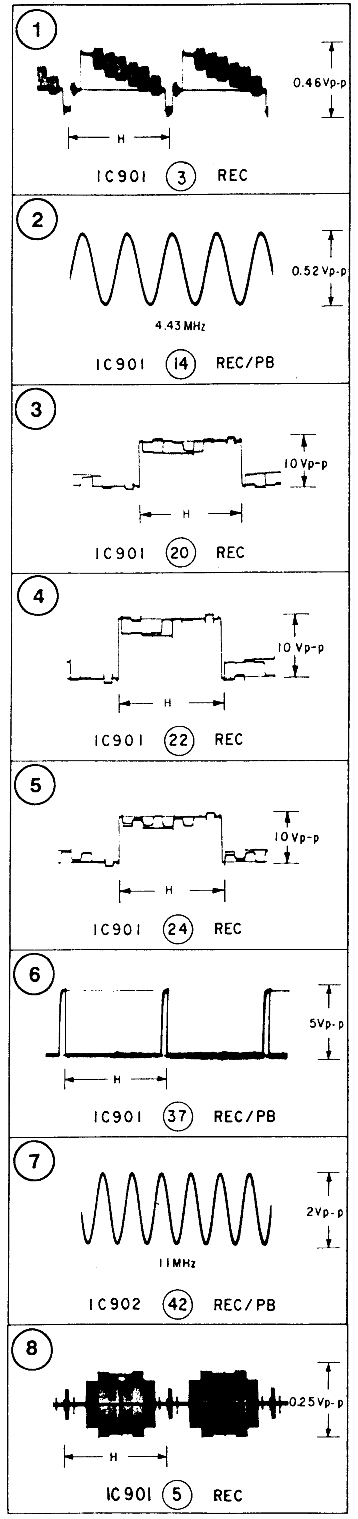
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	
PB			

VF-81 BOARD (CCD-TR3000) NTSC

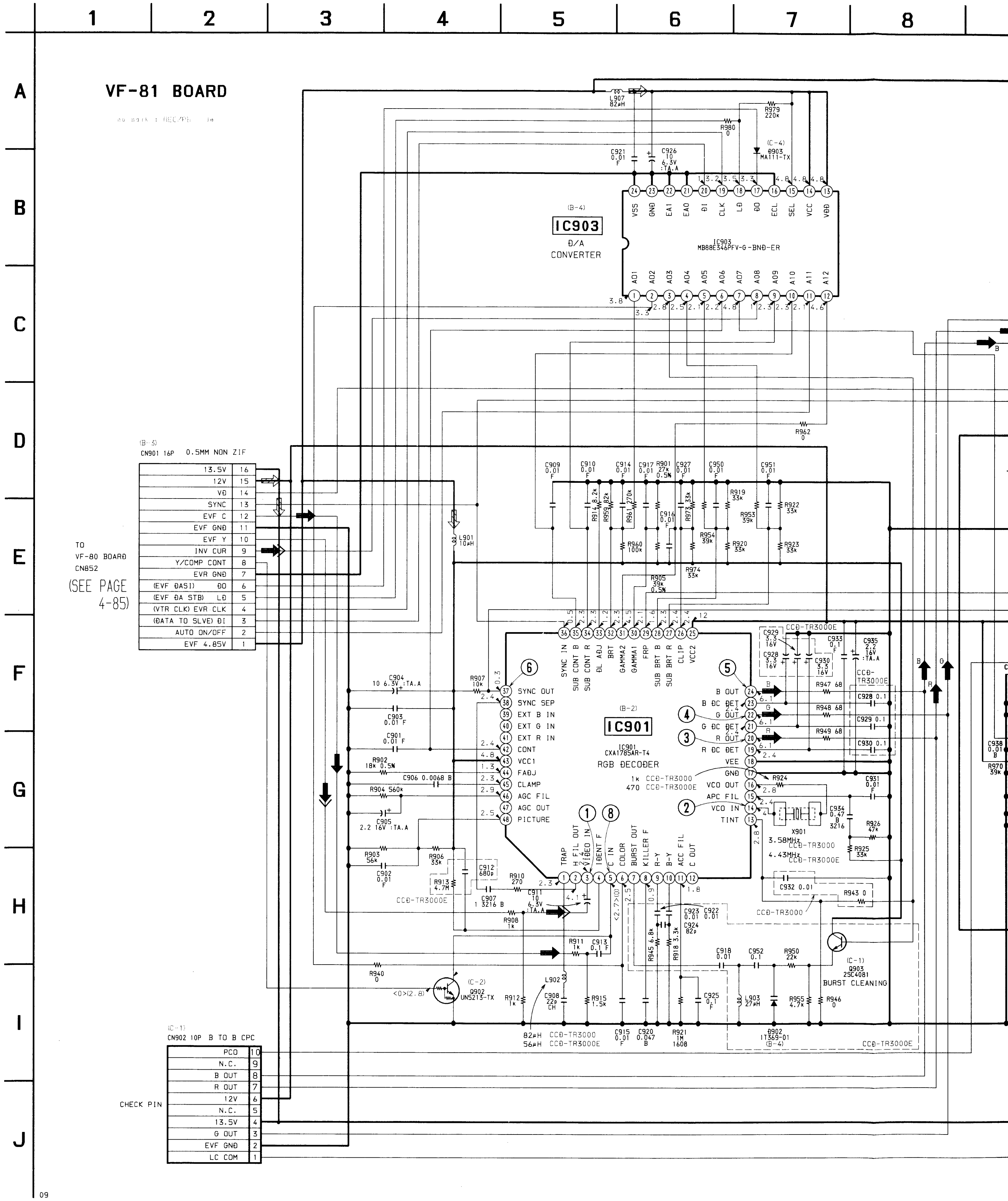


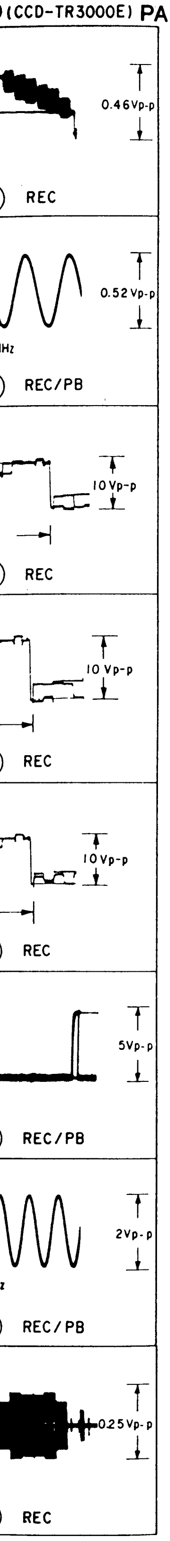
VF-81 BOARD (CCD-TR3000E) PAL



VF-81 (COLOR EVF) SCHEMATIC DIAGRAM

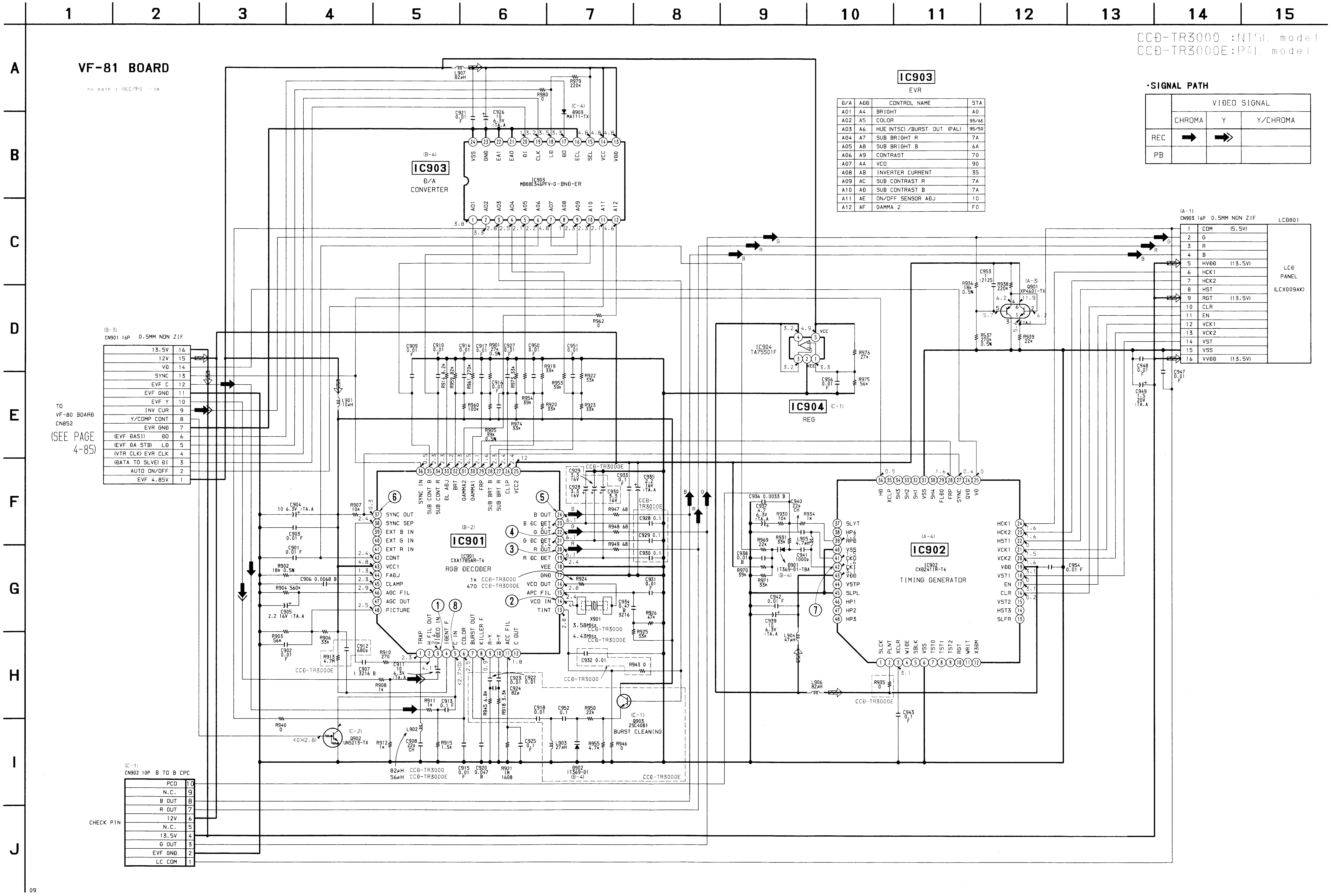
— Ref. No. VF-81 BOARD: 4000 series —


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
VF-81 BOARD
IC903
D/A CONVERTER
IC903 MB88E346PFV-G-BND-ER
VSS GND EA1 EA0 DI CLK LD DO ECL SEL VCC VDD
AO1 AO2 AO3 AO4 AO5 AO6 AO7 AO8 AO9 A10 A11 A12
(C-4) D903 MA111-TX
L907 82μH
R979 220k
R980 0
C921 0.01 F
C926 10 6.3V :TA.A
CN901 16P 0.5MM NON ZIF
13.5V 16
12V 15
VD 14
SYNC 13
EVF C 12
EVF GND 11
EVF Y 10
INV CUR 9
Y/COMP CONT 8
EVR GND 7
(EVF DASI) DO 6
(EVF DA STB) LD 5
(VTR CLK) EVR CLK 4
(DATA TO SLVE) DI 3
AUTO ON/OFF 2
EVF 4.85V 1
TO VF-80 BOARD CN852
(SEE PAGE 4-85)
L901 10μH
R962 0
IC901
CXA1785AR-T4
RGB DECODER
SYNC IN
SUB CONT B
SUB CONT R
BL ADJ
BRT
GAMMA2
GAMMA1
FRP
SUB BRT B
SUB BRT R
CLIP
VCC2
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONT
VCC1
FADJ
CLAMP
AGC FIL
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
VEE
GND
VCO OUT
APC FIL
VCO IN
TINT
TRAP
H FIL OUT
VIDEO IN
IDENT F
C IN
COLOR
BURST OUT
KILLER F
R-Y
B-Y
ACC FIL
C OUT
1k CCD-TR3000
470 CCD-TR3000E
X901
3.58MHz CCD-TR3000
4.43MHz CCD-TR3000E
(C-1) Q903 2SC4081 BURST CLEANING
(C-2) Q902 UN5213-TX
D902 1T369-01
L902 82μH CCD-TR3000
56μH CCD-TR3000E
L903 27μH
CCD-TR3000E
CCD-TR3000
(C-1) CN902 10P B TO B CPC
PCO 10
N.C. 9
B OUT 8
R OUT 7
12V 6
N.C. 5
13.5V 4
G OUT 3
EVF GND 2
LC COM 1
CHECK PIN
09



VF-81 (COLOR EVF) SCHEMATIC DIAGRAM

— Ref. No. VF-81 BOARD: 4000 series —


1
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13
14
15
A
B
C
D
E
F
G
H
I
J
VF-81 BOARD
no mark : REC/PB mode
CCD-TR3000 :NTSC model
CCD-TR3000E:PAL model
(B-4)
IC903
D/A CONVERTER
IC903
MB88E346PFV-G-BND-ER
VSS
GND
EA1
EA0
DI
CLK
LD
DO
ECL
SEL
VCC
VDD
A01
A02
A03
A04
A05
A06
A07
A08
A09
A10
A11
A12
L907 82μH
R979 220k
R980 0
(C-4)
D903 MA111-TX
C921 0.01 F
C926 10 6.3V :TA.A
(B-2)
IC901
IC901 CXA1785AR-T4
RGB DECODER
SYNC IN
SUB CONT B
SUB CONT R
DL ADJ
BRT
GAMMA2
GAMMA1
FRP
SUB BRT B
SUB BRT R
CLIP
VCC2
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONT
VCC1
FADJ
CLAMP
AGC FIL
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
VEE
GND
VCO OUT
APC FIL
VCO IN
TINT
TRAP
H FIL OUT
VIDEO IN
IDENT F
C IN
COLOR
BURST OUT
KILLER F
R-Y
B-Y
ACC FIL
C OUT
1k CCD-TR3000
470 CCD-TR3000E
X901
3.58MHz CCD-TR3000
4.43MHz CCD-TR3000E
(C-1)
Q903 2SC4081
BURST CLEANING
(C-2)
Q902 UN5213-TX
L902
82μH CCD-TR3000
56μH CCD-TR3000E
D902 1T369-01 (B-4)
(A-4)
IC902
IC902 CXD2411R-T4
TIMING GENERATOR
HD
XCLP
SH3
SH2
SH1
VSS
SH4
FLDO
FRP
SYNC
QVD
VD
SLYT
HP4
RPD
VSS
CKO
CKI
VDD
VSTP
SLPL
HP1
HP2
HP3
HCK1
HCK2
HST1
VCK1
VCK2
VDD
VST1
EN
CLR
VST2
HST3
SLFR
SLCK
PLNT
XCLR
WIDE
SBLK
VSS
TST0
TST1
TST2
RGT
WRIT
X3DM
D901 1T369-01-T8A (B-4)
L906 82μH
R935 0
CCD-TR3000E
IC904 TA75S01F
IC904 (C-1)
REG
VCC
VEE
(A-3)
Q901 XP4601-TX
L901 10μH
①
②
③
④
⑤
⑥
⑦
⑧
TO VF-80 BOARD CN852
(SEE PAGE 4-85)
CHECK PIN

(B-3)
CN901 16P 0.5MM NON ZIF

13.5V	16
12V	15
VD	14
SYNC	13
EVF C	12
EVF GND	11
EVF Y	10
INV CUR	9
Y/COMP CONT	8
EVR GND	7
(EVF DASI) DO	6
(EVF DA STB) LD	5
(VTR CLK) EVR CLK	4
(DATA TO SLVE) DI	3
AUTO ON/OFF	2
EVF 4.85V	1

(C-1)
CN902 10P B TO B CPC

PCO	10
N.C.	9
B OUT	8
R OUT	7
12V	6
N.C.	5
13.5V	4
G OUT	3
EVF GND	2
LC COM	1

(A-1)
CN903 16P 0.5MM NON ZIF

LCD801

1	COM (5.5V)	LCD PANEL (LCX009AK)
2	G	
3	R	
4	B	
5	HVDD (13.5V)	
6	HCK1	
7	HCK2	
8	HST	
9	RGT (13.5V)	
10	CLR	
11	EN	
12	VCK1	
13	VCK2	
14	VST	
15	VSS	
16	VVDD (13.5V)	

IC903

EVR

D/A	ADD	CONTROL NAME	STA
A01	A4	BRIGHT	A0
A02	A5	COLOR	95/6E
A03	A6	HUE (NTSC) /BURST OUT (PAL)	95/50
A04	A7	SUB BRIGHT R	7A
A05	A8	SUB BRIGHT B	6A
A06	A9	CONTRAST	70
A07	AA	VCO	90
A08	AB	INVERTER CURRENT	35
A09	AC	SUB CONTRAST R	7A
A10	AD	SUB CONTRAST B	7A
A11	AE	ON/OFF SENSOR ADJ	10
A12	AF	GAMMA 2	F0

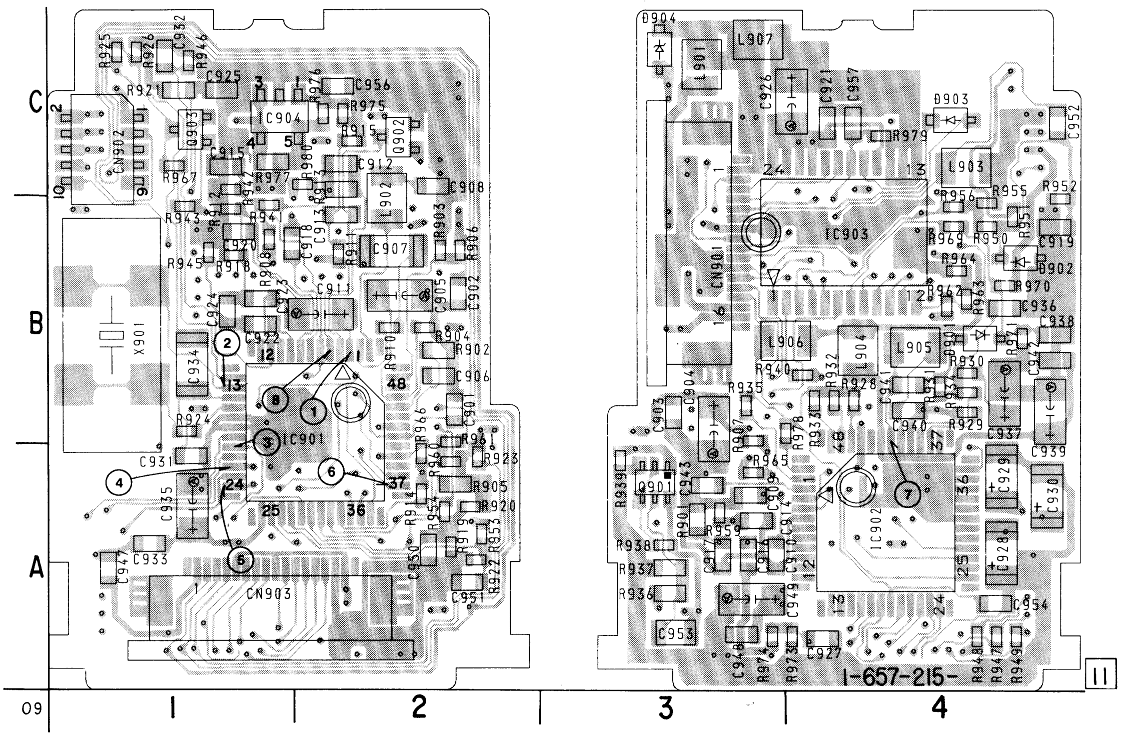
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	
PB			

VF-81 (COLOR EVF) PRINTED WIRING BOARD

— Ref. No. VF-81 BOARD: 4000 series —

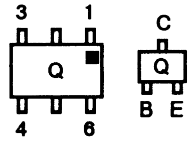
There are few cases that the part isn't mounted in this model is printed on this diagram.

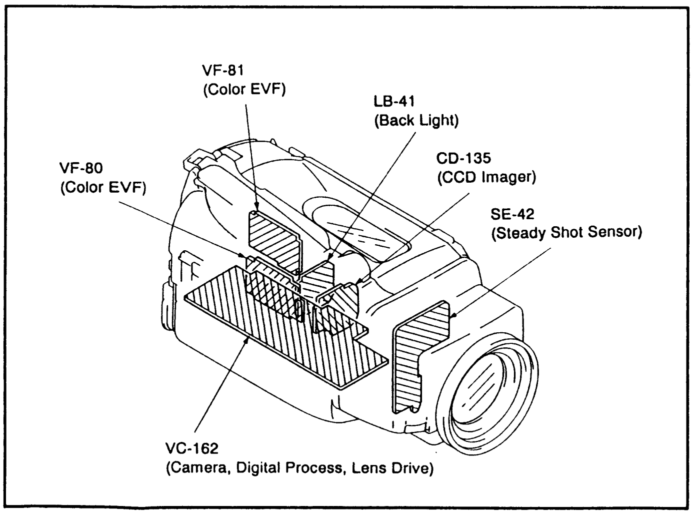

VF-81 BOARD(COMPONENT SIDE)

VF-81 BOARD(CONDUCTOR SIDE)

C
B
A
09
1
2
3
4
IC901
IC902
IC903
IC904
CN901
CN902
CN903
X901
Q901
Q902
D903
L901
L902
L903
L904
L905
L906
L907
①
②
③
④
⑤
⑥
⑦
⑧
1-657-215-
11

- **For printed wiring boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor




VF-81
(Color EVF)
LB-41
(Back Light)
VF-80
(Color EVF)
CD-135
(CCD Imager)
SE-42
(Steady Shot Sensor)
VC-162
(Camera, Digital Process, Lens Drive)

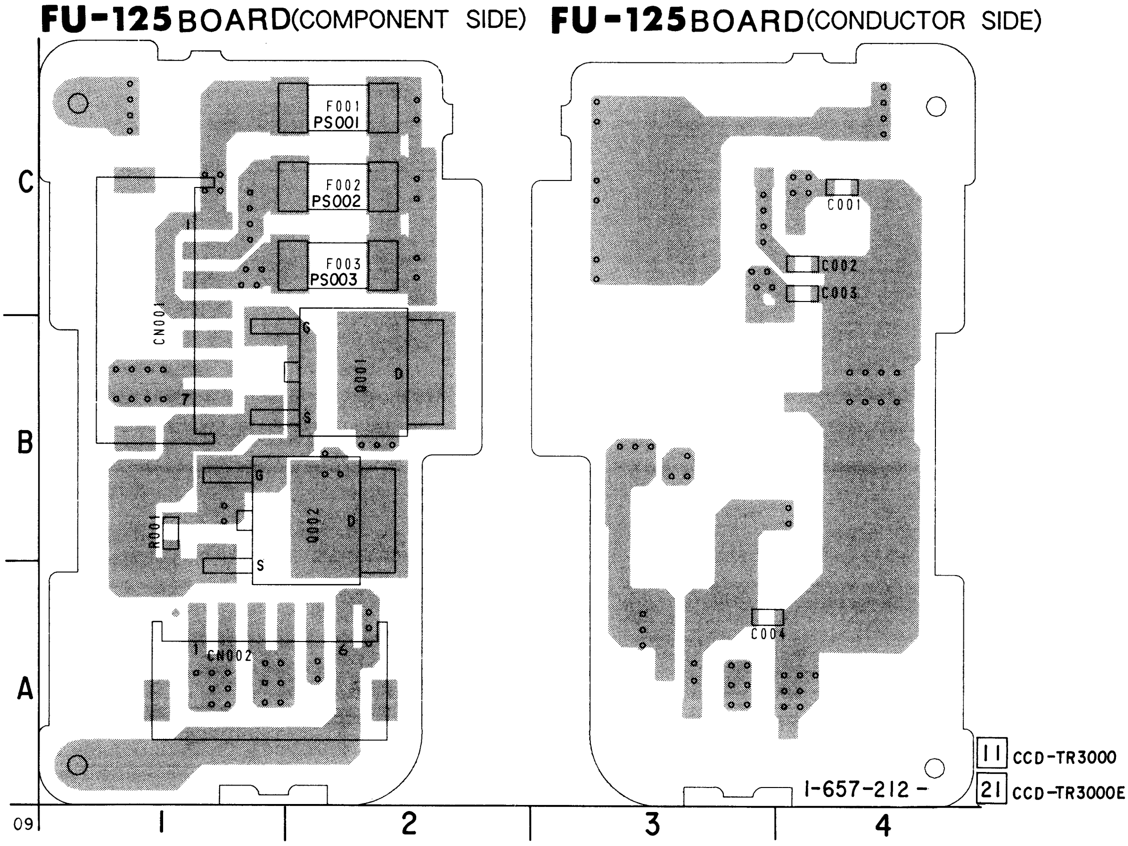
VF-81 BOARD

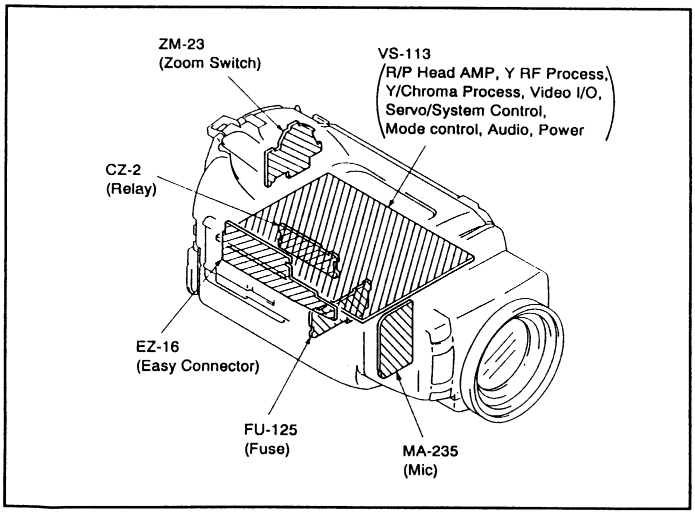
C901	B-2
C902	B-2
C903	B-3
C904	B-3
C905	B-2
C906	B-2
C907	B-2
C908	C-2
C909	A-3
C910	A-3
C911	B-2
C912	C-2
C913	B-2
C914	A-3
C915	C-1
C916	A-3
C917	A-3
C918	B-1
C920	B-1
C921	C-4
C922	B-1
C923	B-1
C924	B-1
C925	C-1
C926	C-4
C927	A-4
C928	A-4
C929	A-4
C930	A-4
C931	A-1
C932	C-1
C933	A-1
C934	B-1
C935	A-1
C936	B-4
C937	B-4
C938	B-4
C939	B-4
C940	B-4
C941	B-4
C942	B-4
C943	A-3
C947	A-1
C948	A-3
C949	A-3
C950	A-2
C951	A-2
C952	C-4
C953	A-3
C954	A-4
C956	C-2
CN901	B-3
CN902	C-1
CN903	A-1
D901	B-4
D902	B-4
D903	C-4
IC901	B-2
IC902	A-4
IC903	B-4
IC904	C-1
L901	C-3
L902	B-2
L903	B-4
L904	B-4
L905	B-4
L906	B-4
L907	C-3
Q901	A-3
Q902	C-2
Q903	C-1
R901	A-3
R902	B-2
R903	B-2
R904	B-2
R905	A-2
R906	B-2
R907	B-3
R908	B-1
R910	B-2
R911	B-2
R912	B-1
R913	C-2
R914	A-2
R915	C-2
R918	B-1
R919	A-2
R920	A-2
R921	C-1
R922	A-2
R923	A-2
R924	B-1
R925	C-1
R926	C-1
R930	B-4
R931	B-4
R934	B-4
R935	B-3
R936	A-3
R937	A-3
R938	A-3
R939	A-3
R940	B-4
R943	B-1
R945	B-1
R946	C-1
R947	A-4
R948	A-4
R949	A-4
R950	B-4
R953	A-2
R954	A-2
R955	B-4
R959	A-3
R960	A-2
R961	B-2
R962	B-4
R969	B-4
R970	B-4
R971	B-4
R973	A-4
R974	A-3
R975	C-2
R976	C-2
R979	C-4
R980	C-2
X901	B-1

FU-125 (FUSE) PRINTED WIRING BOARD

— Ref. No. FU-125 BOARD: 1000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.


FU-125 BOARD(COMPONENT SIDE)
FU-125 BOARD(CONDUCTOR SIDE)
F001
PS001
F002
PS002
F003
PS003
CN001
1
7
Q001
G
D
S
Q002
G
D
S
R001
CN002
1
6
C001
C002
C003
C004
1-657-212 -
11 CCD-TR3000
21 CCD-TR3000E
C
B
A
09
1
2
3
4

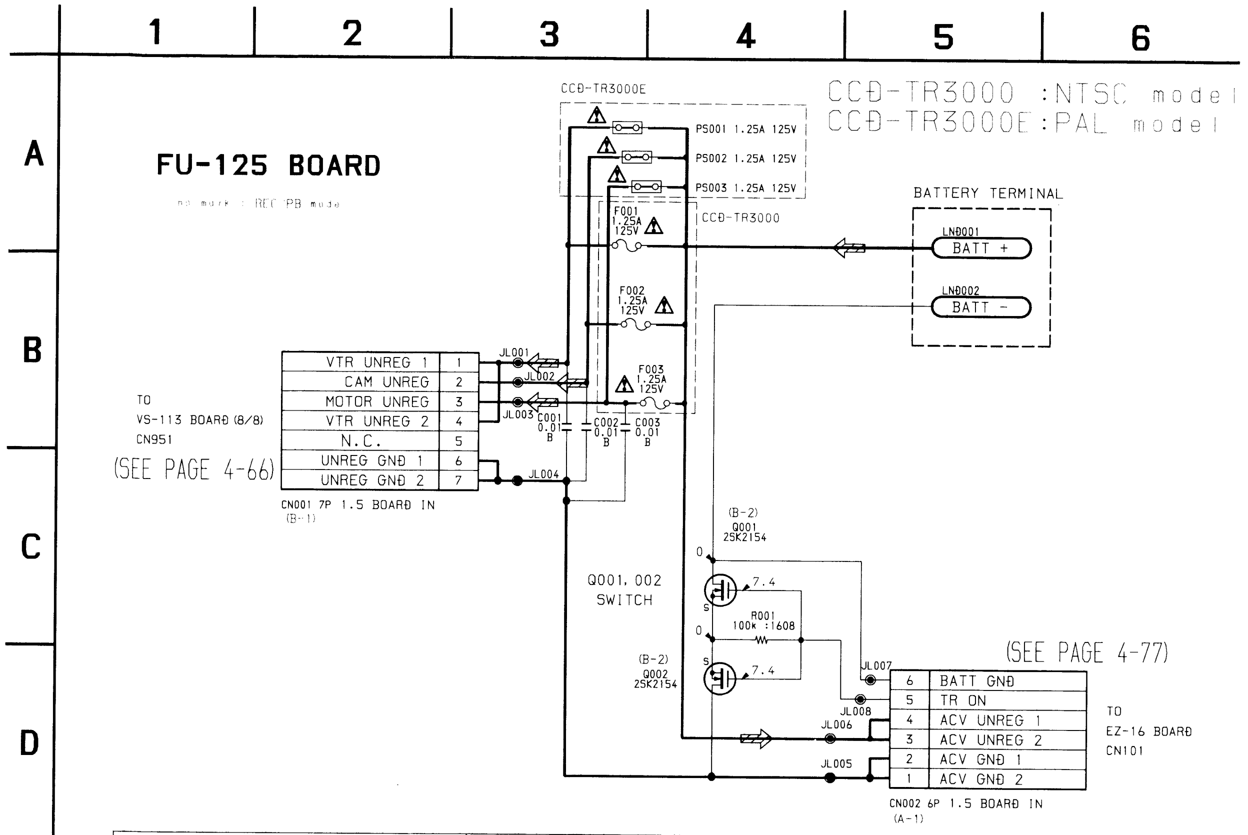

ZM-23
(Zoom Switch)
VS-113
R/P Head AMP, Y RF Process, Y/Chroma Process, Video I/O, Servo/System Control, Mode control, Audio, Power
CZ-2
(Relay)
EZ-16
(Easy Connector)
FU-125
(Fuse)
MA-235
(Mic)

FU-125 BOARD

C001	C-4
C002	C-4
C003	C-4
CN001	B-1
CN002	A-1
F001	C-2
F002	C-2
F003	C-2
PS001	C-2
PS002	C-2
PS003	C-2
Q001	B-2
Q002	B-2
R001	B-1

FU-125 (FUSE) SCHEMATIC DIAGRAM

— Ref. No. FU-125 BOARD: 1000 series —


1
2
3
4
5
6
A
B
C
D
FU-125 BOARD
CCD-TR3000E
CCD-TR3000 :NTSC model
CCD-TR3000E :PAL model
PS001 1.25A 125V
PS002 1.25A 125V
PS003 1.25A 125V
F001 1.25A 125V
CCD-TR3000
F002 1.25A 125V
F003 1.25A 125V
BATTERY TERMINAL
LND001
BATT +
LND002
BATT −
JL001
JL002
JL003
JL004
C001 0.01 B
C002 0.01 B
C003 0.01 B
VTR UNREG 1
CAM UNREG
MOTOR UNREG
VTR UNREG 2
N.C.
UNREG GND 1
UNREG GND 2
TO VS-113 BOARD (8/8) CN951
(SEE PAGE 4-66)
CN001 7P 1.5 BOARD IN (B-1)
(B-2) Q001 2SK2154
Q001, 002 SWITCH
R001 100k :1608
(B-2) Q002 2SK2154
7.4
0
S
JL005
JL006
JL007
JL008
(SEE PAGE 4-77)
BATT GND
TR ON
ACV UNREG 1
ACV UNREG 2
ACV GND 1
ACV GND 2
TO EZ-16 BOARD CN101
CN002 6P 1.5 BOARD IN (A-1)

E

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

09

SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

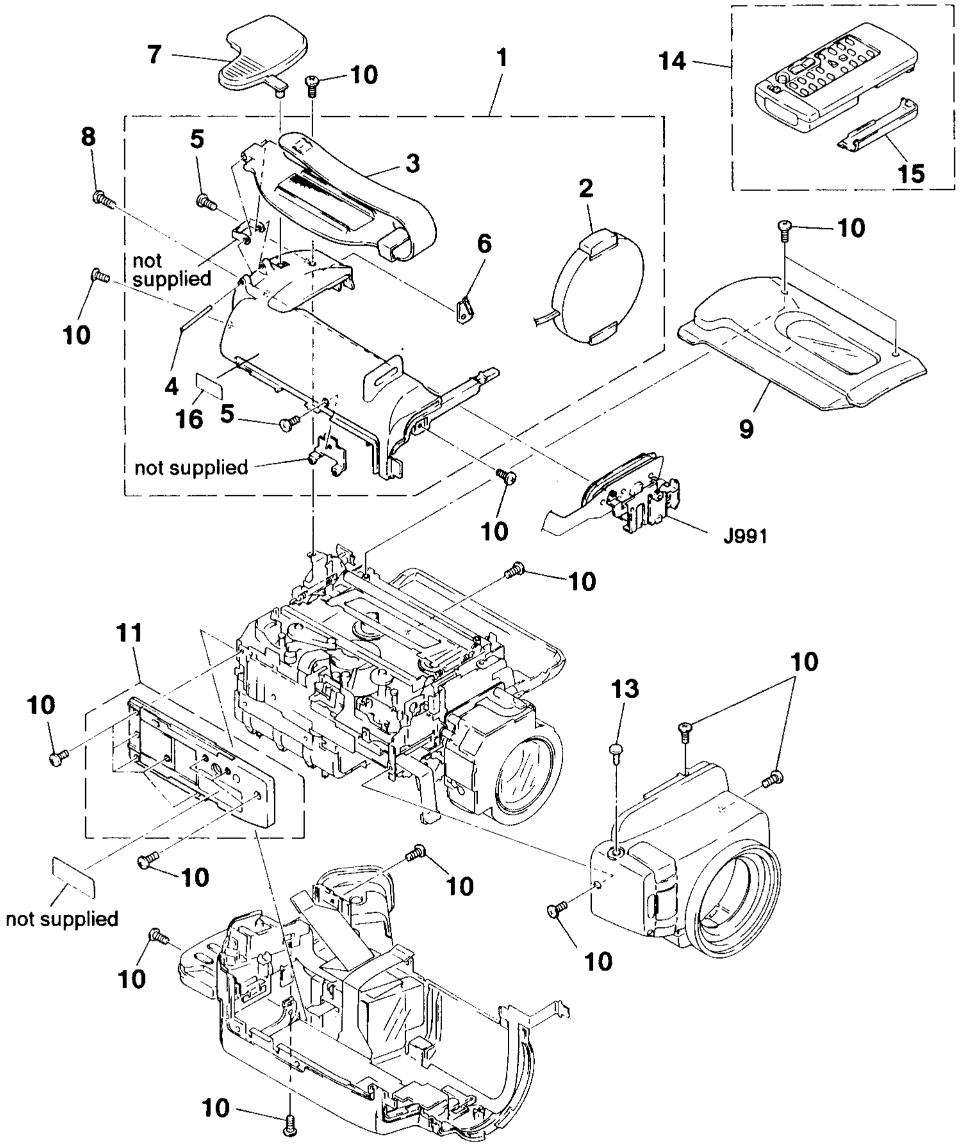
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Canadian model is abbreviated as CND.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

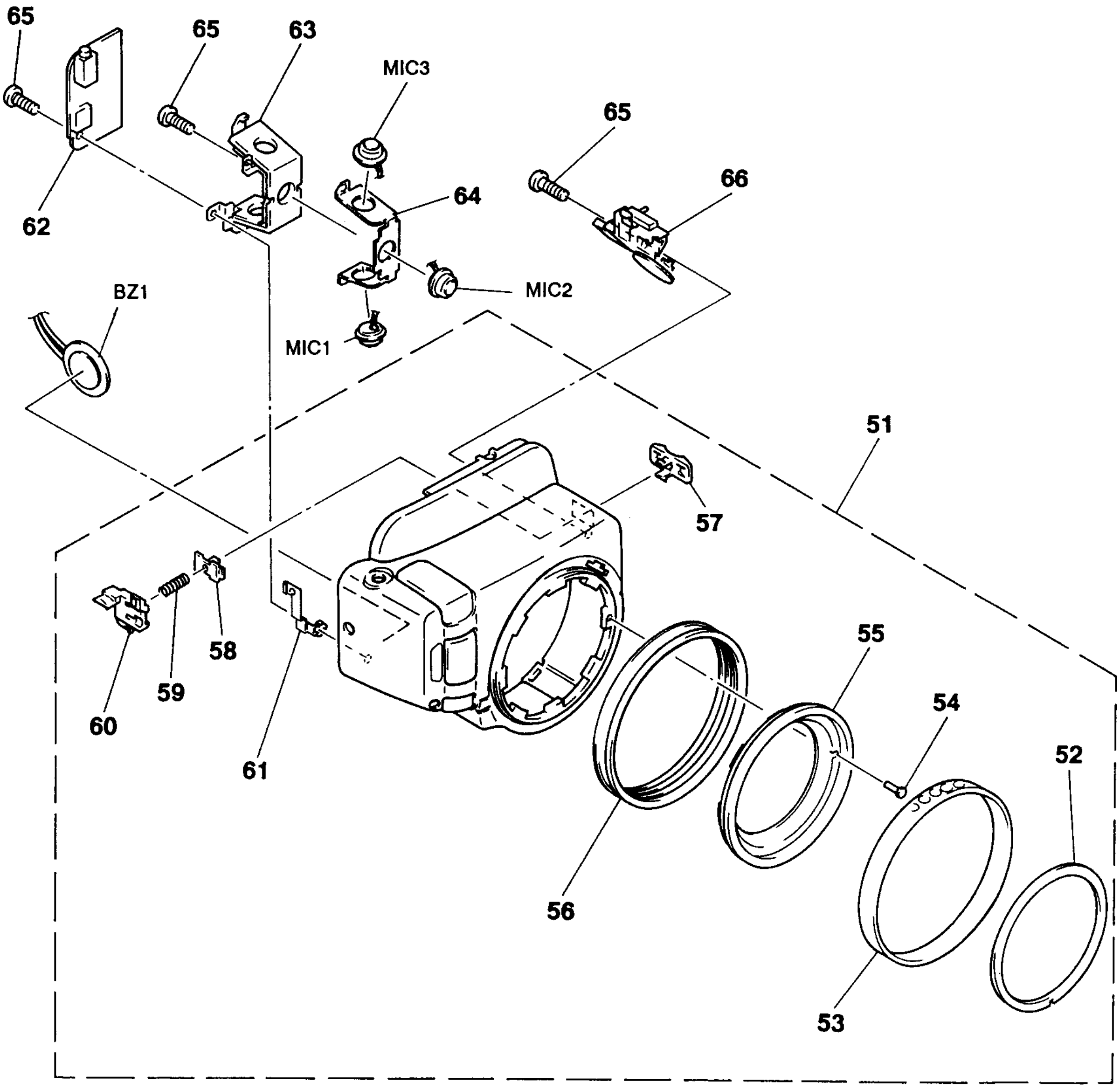
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

5-1-1. CABINET (L) ASSEMBLY



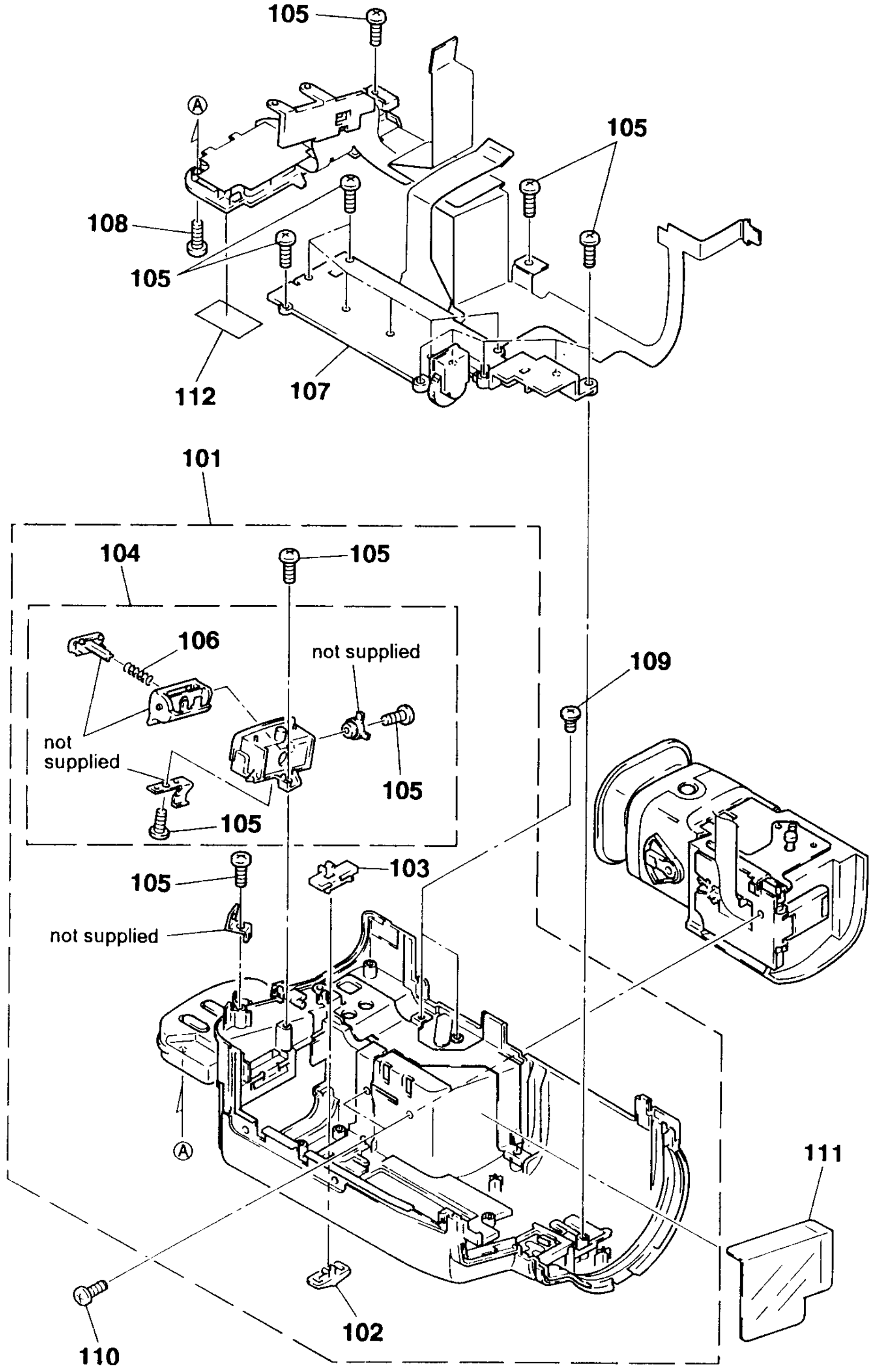
Ref.No.	Part No.	Description	Remark
1	A-7083-011-A	CABINET (L) BLOCK ASSY	
2	X-3945-280-1	CAP ASSY, LENS	
3	3-948-905-81	BELT, GRIP	
4	3-948-913-01	SHAFT, BELT	
5	3-719-381-01	SCREW (M2X4)	
6	3-948-922-01	BRACKET (L), STRAP	
7	3-955-599-01	COVER, JACK	
8	3-719-601-11	SCREW (B2X5), TAPPING	
9	X-3945-476-1	LID ASSY, CASSETTE	
10	3-962-826-01	SCREW (2X4)	
11	X-3945-475-1	BOTTOM ASSY, CABINET	
13	3-728-267-01	COVER, 3.5 JACK	
14	8-917-267-90	REMOTE CONTROL RMT-712 SET (TR3000E:AEP, UK)	
14	8-917-270-90	REMOTE CONTROL RMT-711 SET (TR3000/TR3000E:E, AUS, HK)	
15	3-742-854-21	LID, BATTERY CASE	
* 16	3-704-367-31	LABEL (TR3000 only)	
J991	1-537-577-11	TERMINAL BOARD	

5-1-2. FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
51	X-3945-471-1	PANEL ASSY, FRONT (TR3000:US, CND)	
51	X-3945-486-1	PANEL ASSY, FRONT (TR3000E:AEP, UK)	
51	X-3945-548-1	PANEL ASSY, FRONT (TR3000:E, HK/TR3000E:E, AUS, HK)	
52	3-965-072-01	PLATE, NAME	
53	3-965-071-01	BAND, RING	
54	3-965-060-01	PIN, MF FIXED	
55	3-965-098-01	SCREW	
56	3-965-097-01	RING, MF	
57	3-965-022-01	KNOB, POWER	
58	3-965-032-01	LOCK, POWER	
59	3-965-034-01	SPRING, COMPRESSION	
60	3-965-033-01	RETAINER, POWER BUTTON	
* 61	3-965-036-01	PLATE, ELECTROSTATIC, MA	
62	A-7072-378-A	MA-235 BOARD, COMPLETE (TR3000E)	
62	A-7072-415-A	MA-235 BOARD, COMPLETE (TR3000)	
63	X-3945-274-1	BRACKET ASSY, MICROPHONE	
64	3-965-055-01	RETAINER (1), MICROPHONE	
65	3-719-601-01	SCREW (B2X5), TAPPING	
66	1-473-243-11	SWITCH BLOCK, CONTROL (PF-4260)	
BZ1	1-529-096-11	BUZZER, PIEZOELECTRIC	
MIC1	1-542-215-51	MICROPHONE, CONDENSER	
MIC2	1-542-215-51	MICROPHONE, CONDENSER	
MIC3	1-542-215-51	MICROPHONE, CONDENSER	

5-1-3. CABINET (R) ASSEMBLY

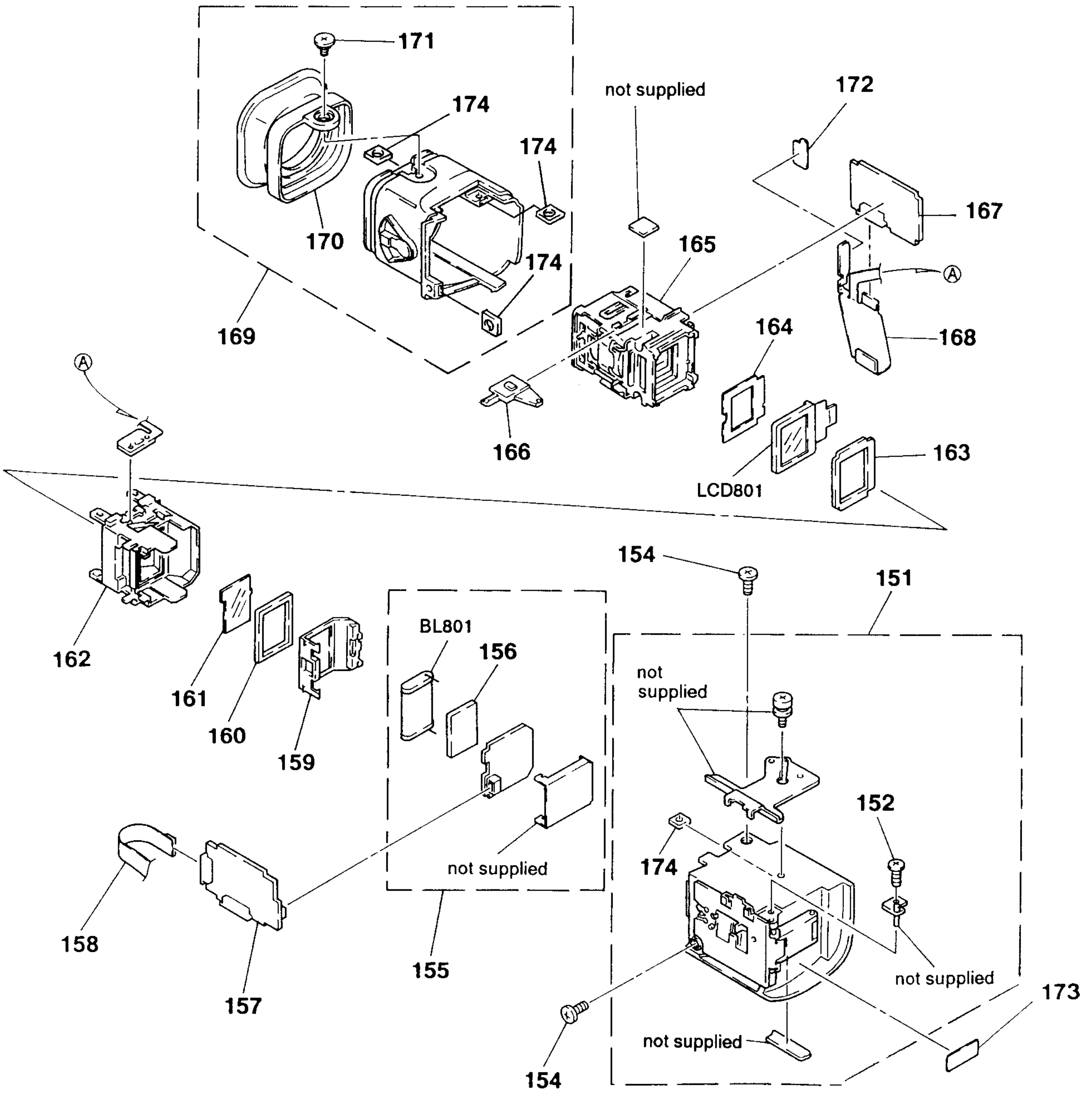


105
Ⓐ
105
108
105
112
107
101
104
105
106
not supplied
109
not supplied
105
105
105
103
not supplied
Ⓐ
111
110
102

Ref. No.	Part No.	Description	Remark
101	X-3945-470-1	CABINET (R) ASSY (TR3000:US,CND)	
101	X-3945-474-1	CABINET (R) ASSY (TR3000E)	
101	X-3945-547-1	CABINET (R) ASSY (TR3000:E,HK)	
102	3-965-067-01	BUTTON, HOLD	
103	3-965-068-01	RETAINER, HOLD BUTTON	
* 104	X-3944-354-1	CASE ASSY, STAND-BY	
105	3-719-601-01	SCREW (B2X5), TAPPING	

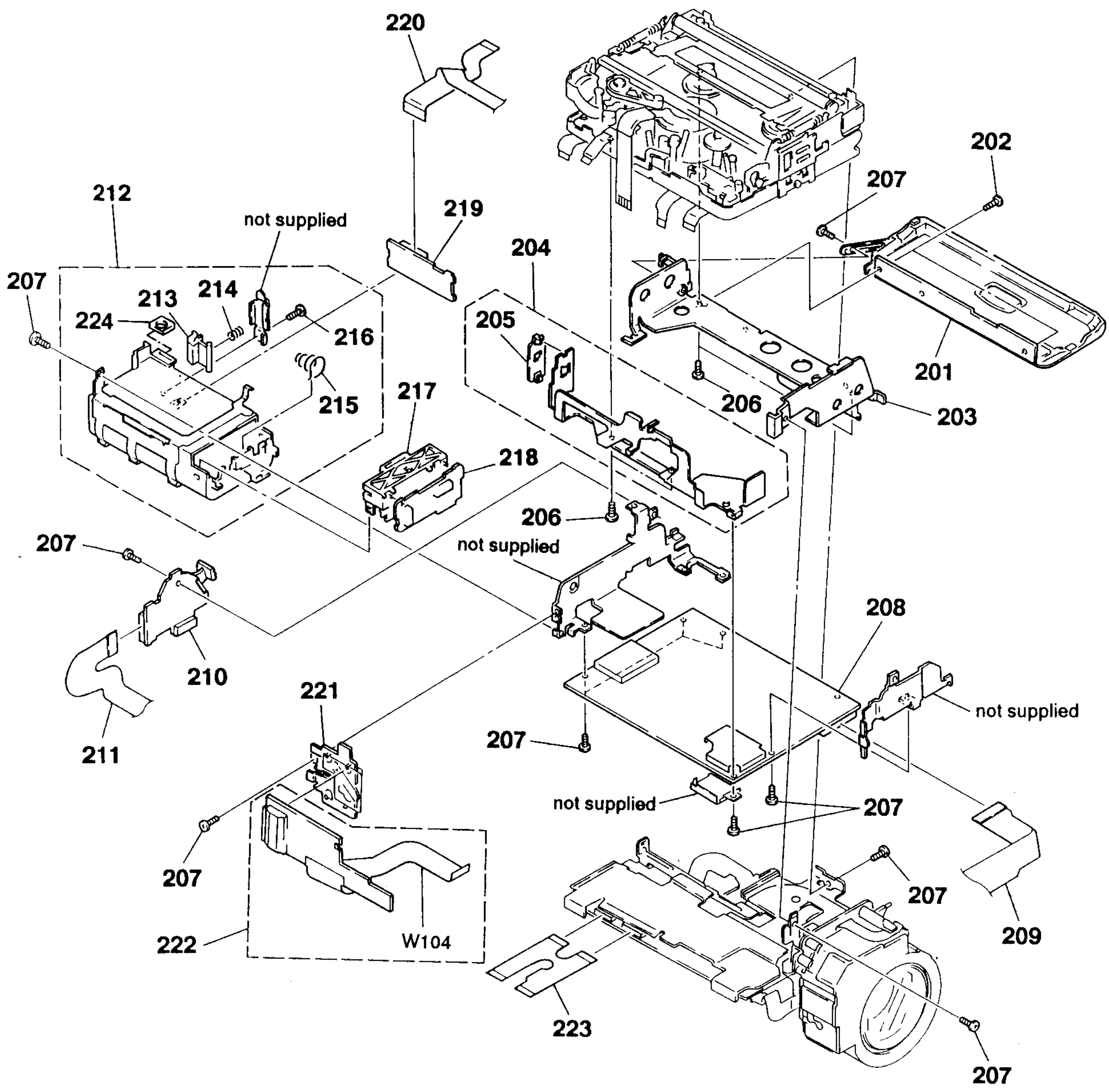
Ref. No.	Part No.	Description	Remark
106	3-143-509-01	SPRING, COMPRESSION	
107	1-473-242-11	SWITCH BLOCK, CONTROL (CF-4260)	
108	3-719-601-11	SCREW (B2X5), TAPPING	
109	3-724-455-21	SCREW (M2X2.5)	
110	3-719-381-21	SCREW (M2X6)	
* 111	3-965-852-01	INSULATOR, CF	
112	3-704-256-01	LABEL, CAUTION	

5-1-4. EVF ASSEMBLY


171
174
174
not supplied
172
167
170
165
174
Ⓐ
169
168
164
Ⓐ
166
163
LCD801
154
151
162
BL801
156
161
not
supplied
160
159
152
174
not supplied
158
155
not supplied
173
157
not supplied
154

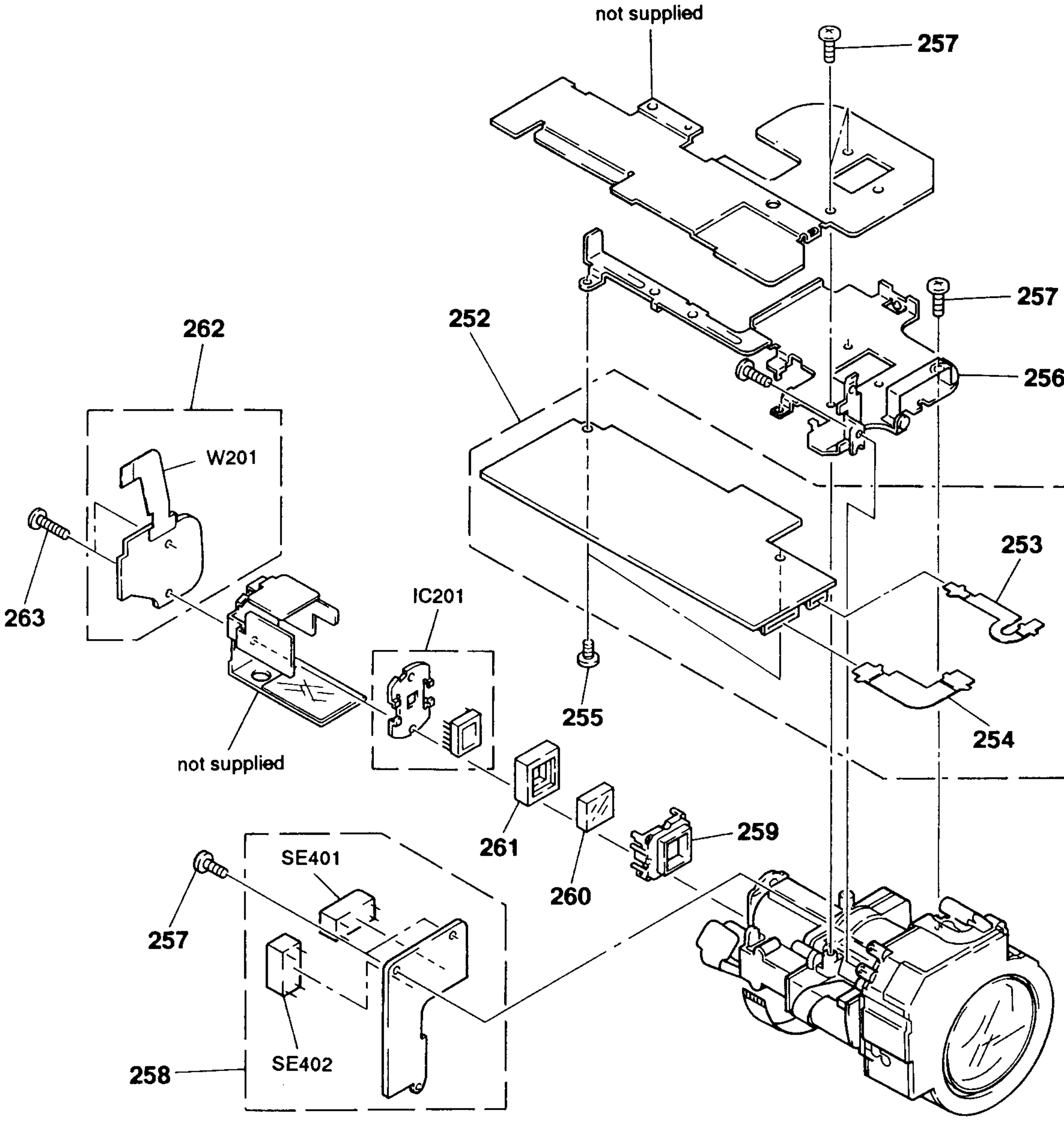
Ref. No.	Part No.	Description	Remark
151	X-3945-478-1	CABINET ASSY, EVF FRONT	
152	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
154	3-962-826-01	SCREW (2X4)	
155	A-7072-375-A	LB-41 BOARD, COMPLETE (TR3000E)	
155	A-7072-412-A	LB-41 BOARD, COMPLETE (TR3000)	
156	3-965-053-01	SPACER, BL	
157	A-7072-376-A	VF-80 BOARD, COMPLETE (TR3000E)	
157	A-7072-413-A	VF-80 BOARD, COMPLETE (TR3000)	
158	1-657-201-11	FP-261 FLEXIBLE BOARD	
159	3-965-079-01	HOLDER, LB	
160	3-965-929-01	CUSHION, LB	
* 161	3-955-570-01	PLATE, CONDENSE, BL	
162	X-3945-278-1	HOLDER ASSY, PRISM	
163	3-965-073-01	CUSHION, LCD	
164	3-965-056-01	MASK, LCD	
165	X-3945-284-1	LENS ASSY, VF	
166	3-965-106-01	SWITCH, POWER SAVE	
167	A-7072-377-A	VF-81 BOARD, COMPLETE (TR3000E)	
167	A-7072-414-A	VF-81 BOARD, COMPLETE (TR3000)	
168	1-657-206-11	FP-264 FLEXIBLE BOARD	
169	X-3945-479-1	CABINET ASSY, EVF REAR (TR3000E)	
169	X-3945-546-1	CABINET ASSY, EVF (REAR)(TR3000)	
170	3-965-088-01	EYE CUP	
171	3-965-077-01	SCREW, SPECIAL (M2)	
* 172	3-960-351-01	COVER, SENSOR	
173	3-744-894-01	LABEL, EVF	
174	3-718-233-01	NUT, PLATE	
BL801	1-519-746-91	TUBE, FLUORESCENT (0.7 INCH)	
LCD801	8-753-016-00	LCX009AK-4 (TR3000/TR3000E:E, AUS, HK)	
LCD801	8-753-016-04	LCX009AK-1 (TR3000E:AEP, UK)	

5-1-5. MAIN BOARDS ASSEMBLY


220
212
not supplied
219
202
207
204
207
213
214
224
216
205
215
217
201
206
203
218
206
not supplied
207
208
210
221
not supplied
211
207
not supplied
207
207
207
222
W104
209
223
207

Ref. No.	Part No.	Description	Remark
201	1-473-241-21	SWITCH BLOCK, CONTROL (FK-4260) (TR3000E:AEP, UK)	
201	1-473-241-31	SWITCH BLOCK, CONTROL (FK-4260) (TR3000/TR3000E:E, AUS, HK)	
202	3-962-826-01	SCREW (2X4)	
203	X-3945-286-1	FRAME ASSY, MAIN	
204	X-3944-341-1	FRAME (LOWER) ASSY, MD	
205	3-948-967-01	CLIP (A), FRAME	
206	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
207	3-713-786-21	SCREW (M2X3)	
208	A-7066-596-A	VS-113(H) BOARD, COMPLETE (TR3000E)	
208	A-7066-650-A	VS-113(H) BOARD, COMPLETE (TR3000)	
209	1-657-200-11	FP-260 FLEXIBLE BOARD	
210	A-7072-372-A	ZM-23P BOARD, COMPLETE (TR3000E)	
210	A-7072-409-A	ZM-23 BOARD, COMPLETE (TR3000)	
211	1-657-205-11	FP-263 FLEXIBLE BOARD	
212	X-3945-477-1	HOLDER ASSY, BATTERY	
213	3-955-588-11	BUTTON, BATTERY RELEASE	
214	3-303-936-00	SPRING, COMPRESSION	
215	3-960-345-01	SPRING, CONE COIL	
216	3-719-601-01	SCREW (B2X5), TAPPING	
217	1-537-578-11	TERMINAL BOARD, BATTERY	
218	A-7072-374-A	FU-125P BOARD, COMPLETE (TR3000E)	
218	A-7072-411-A	FU-125 BOARD, COMPLETE (TR3000)	
219	A-7072-373-A	CZ-2 BOARD, COMPLETE (TR3000E)	
219	A-7072-410-A	CZ-2 BOARD, COMPLETE (TR3000)	
220	1-657-202-11	FP-262 FLEXIBLE BOARD	
221	X-3942-719-1	RETAINER ASSY, EZ	
222	A-7072-371-A	EZ-16P BOARD, COMPLETE (TR3000E)	
222	A-7072-408-A	EZ-16 BOARD, COMPLETE (TR3000)	
223	1-657-196-11	FP-256 FLEXIBLE BOARD	
224	3-718-233-01	NUT, PLATE	
W104	1-653-838-11	FP-185 FLEXIBLE BOARD	

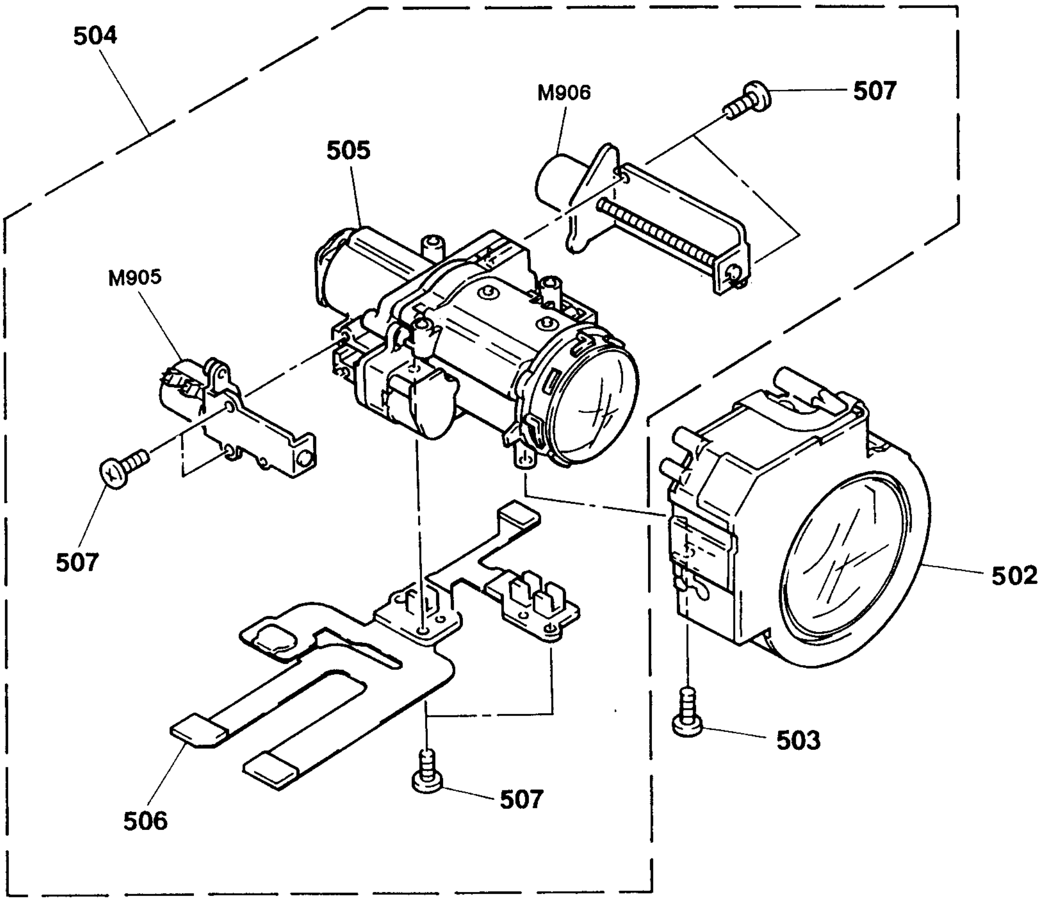
5-1-6. CAMERA ASSEMBLY



Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
252	A-7066-595-A	VC-162 BOARD, COMPLETE (TR3000E)	
252	A-7066-649-A	VC-162 BOARD, COMPLETE (TR3000)	
253	1-657-198-11	FP-258 FLEXIBLE BOARD	
254	1-657-199-11	FP-259 FLEXIBLE BOARD	
255	3-713-786-21	SCREW (M2X3)	
256	X-3945-287-1	FRAME ASSY, LENS	
257	3-719-601-01	SCREW (B2X5), TAPPING	
258	A-7072-370-A	SE-42P BOARD, COMPLETE (TR3000E)	
258	A-7072-407-A	SE-42 BOARD, COMPLETE (TR3000)	
259	3-953-816-01	ADAPTOR (F), CCD FITTING	
260	1-547-767-41	FILTER BLOCK, OPTICAL	
261	3-961-192-01	RUBBER (FH), SEAL	
262	A-7072-369-A	CD-135P BOARD, COMPLETE (TR3000E)	
262	A-7072-406-A	CD-135 BOARD, COMPLETE (TR3000)	
263	3-318-203-11	SCREW (B1.7X6), TAPPING	
IC201	A-7030-615-A	CCD BLOCK ASSY (ICX-079AK-1)(CCD IMAGER) (TR3000E)	
IC201	A-7030-634-A	CCD BLOCK ASSY (ICX-078AK-1)(CCD IMAGER) (TR3000)	
SE401	1-810-889-31	SENSOR, ANGULAR VELOCITY (PITCH)	
SE402	1-810-889-41	SENSOR, ANGULAR VELOCITY (YAW)	
W201	1-657-197-11	FP-257 FLEXIBLE BOARD	

5-1-7. ZOOM LENS ASSEMBLY (VCL-4216VA)

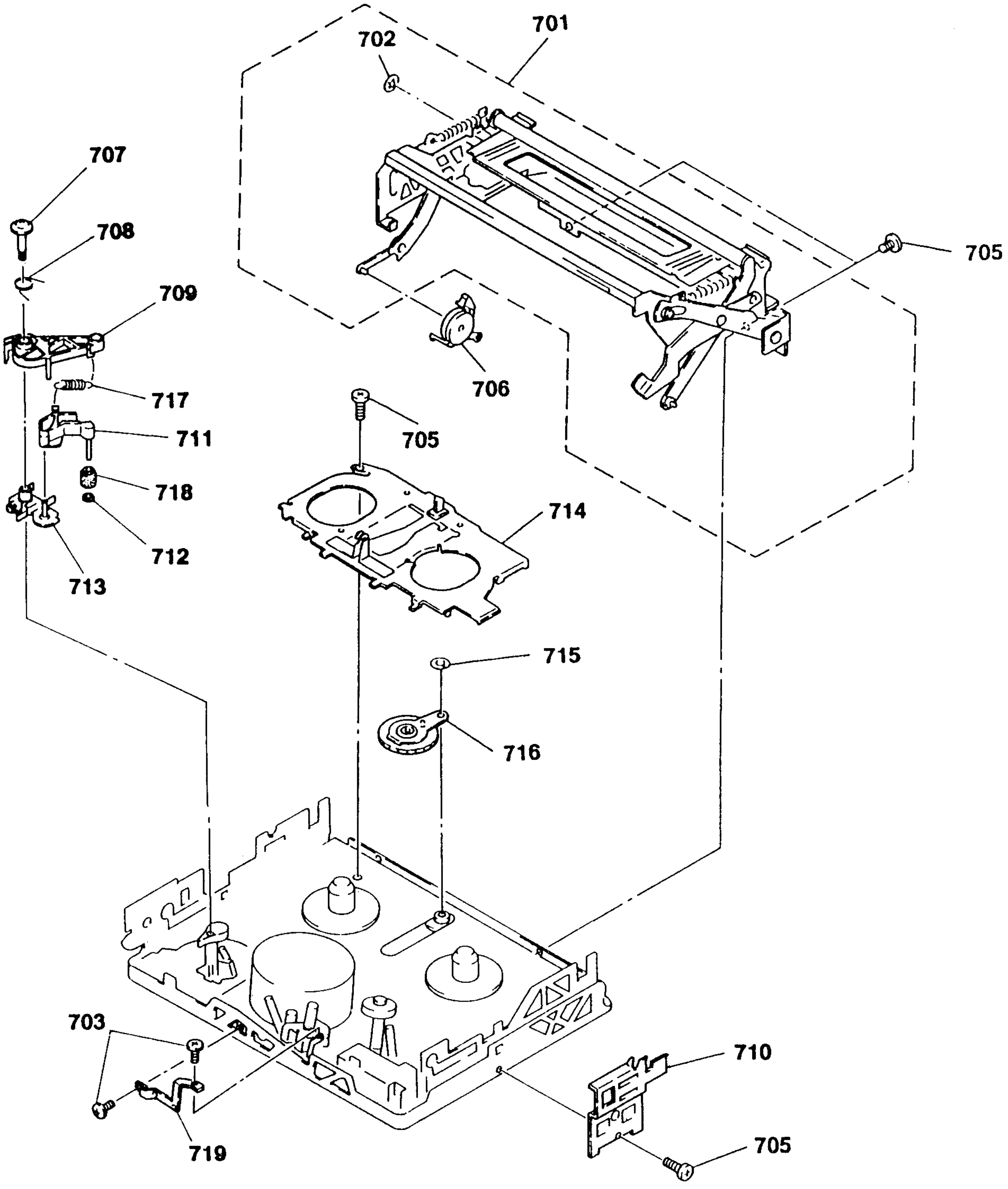


Note: The IRIS motor can not be supplied as a single product.
When replacing the IRIS motor, always replace it as a whole body tube unit (B).
Never disassemble the body tube unit (B).

Ref. No.	Part No.	Description	Remark
502	A-7030-674-A	VAP BLOCK ASSY	
503	3-709-038-01	SCREW, TAP	
504	3-709-033-01	MAIN TUBE, MIRROR UNIT (A)	
505	3-709-034-01	MAIN TUBE, MIRROR UNIT (B)	
506	3-709-035-01	FLEXIBLE, MAIN	

Ref. No.	Part No.	Description	Remark
507	3-707-946-01	SCREW	
M905	3-709-036-01	MOTOR, FOCUS	
M906	3-709-037-01	MOTOR, ZOOM	

5-1-8. CASSETTE COMPARTMENT ASSEMBLY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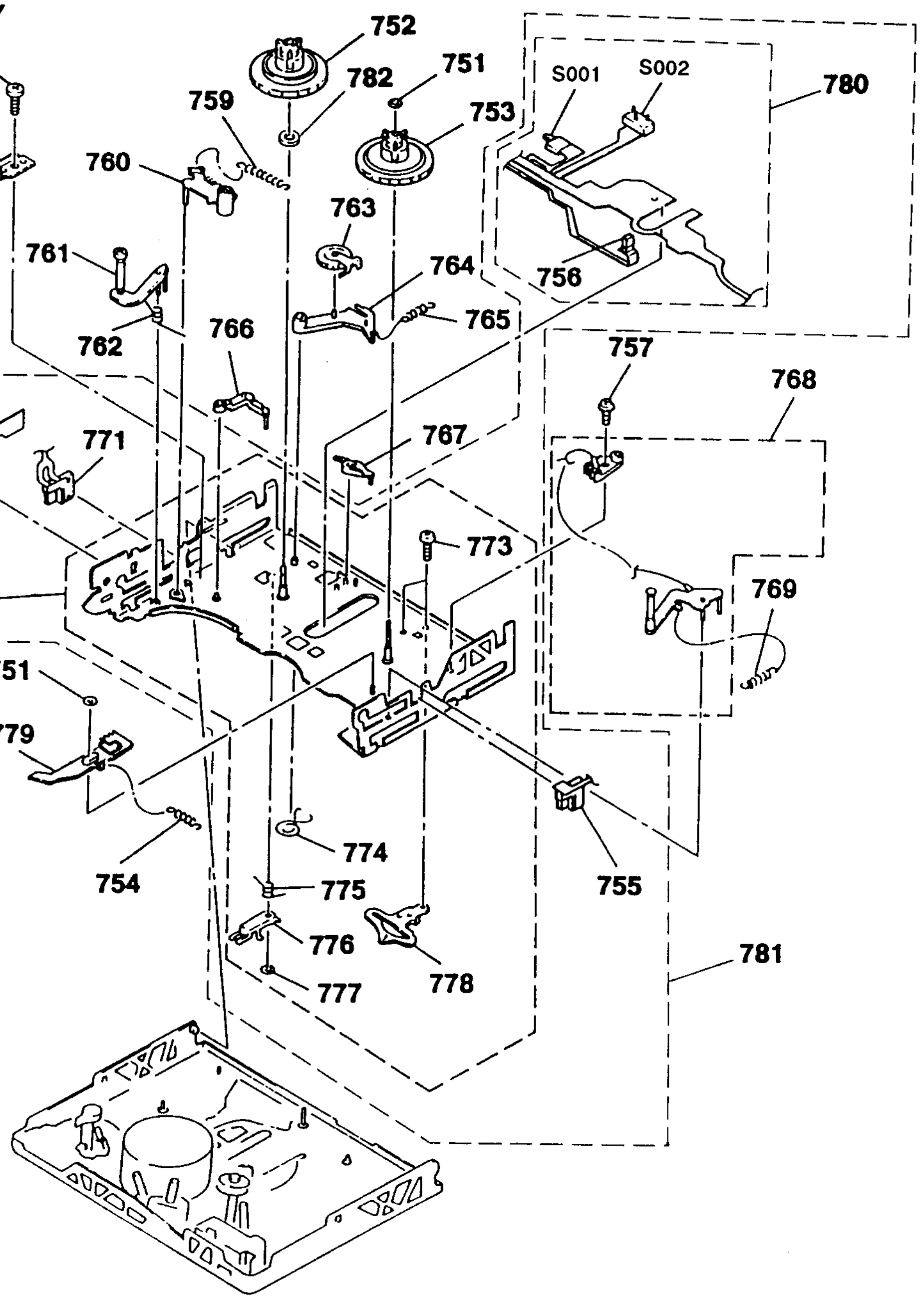
Ref. No.	Part No.	Description	Remark
701	A-7040-376-A	CASSETTE COMPARTMENT BLOCKASSY	
702	3-669-465-01	WASHER (1.5), STOPPER	
703	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
705	3-947-503-01	SCREW (M1.4X2.5)	
706	A-7040-377-A	DAMPER ASSY	
707	3-954-941-01	SCREW (M 1.4)	
708	3-954-939-01	SPRING, TORSION	
709	3-954-910-01	LEVER, HP	
* 710	3-954-745-01	RETAINER, CASSETTE COMPARTMENT	
711	X-3943-156-1	ARM ASSY, HP	
712	3-315-414-31	WASHER	
713	3-955-824-01	PLATE, HP	
714	X-3944-226-1	RETAINER ASSY, GOOSENECK	
715	3-331-007-21	WASHER	
716	X-3943-734-1	GEAR ASSY, GOOSENECK	
717	3-954-940-01	SPRING, TENSION	
718	X-3940-796-1	ROLLER ASSY, HC	

5-1-9. LS CHASSIS ASSEMBLY



Note: There are two types of parts for 770 and 780. When placing order of these parts, confirm the model to repair and place order.

Ref. No.	TYPE A	TYPE B
770	FP-690	FP-317
780	FP-689	FP-316

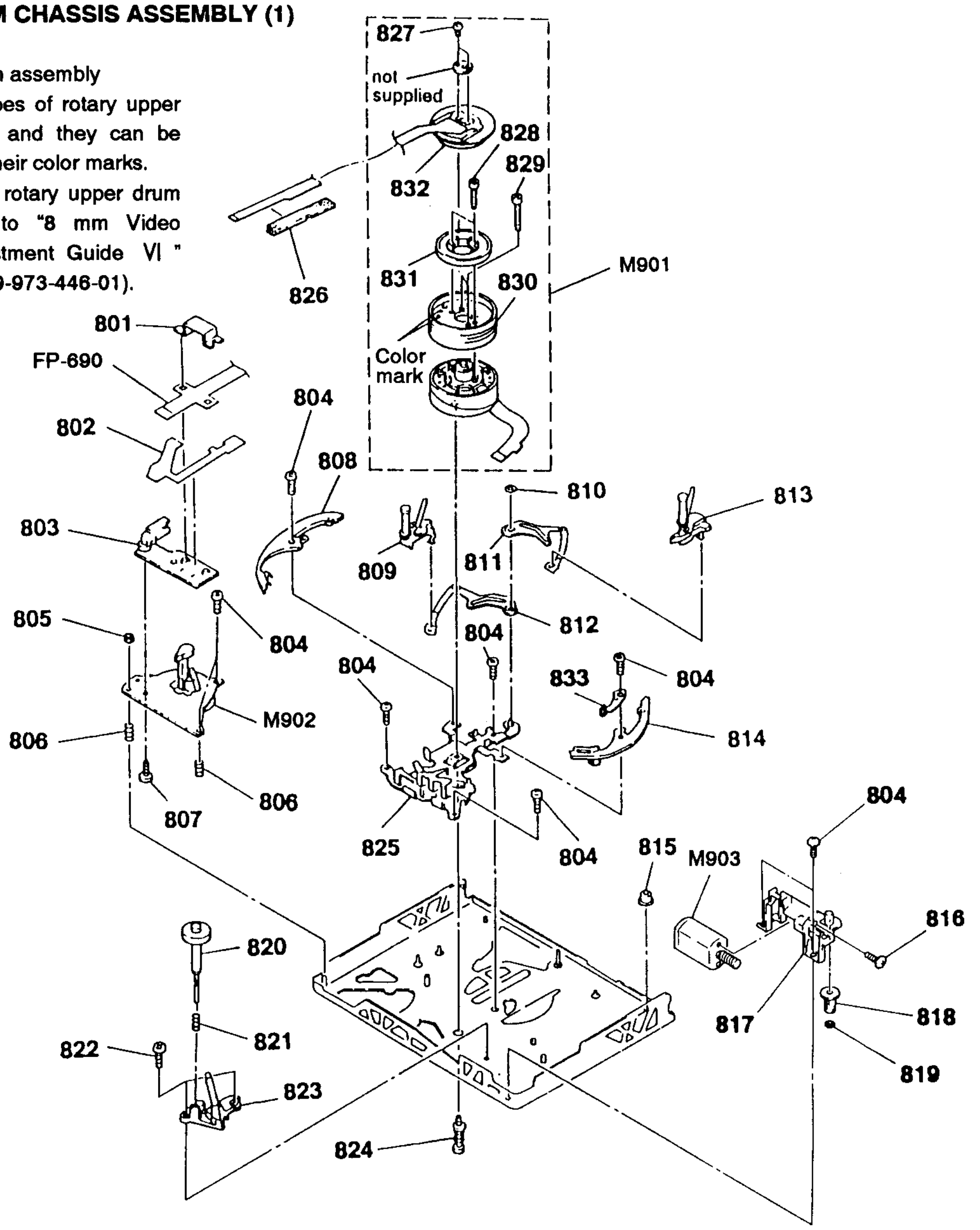
TYPE A: They are soldered, and FP-690 and FP-689 can be replaced independently.

TYPE B: FP-317 and FP-316 are connected by heat-pressure. They cannot be replaced independently. (FP-317 is included in FP-316 mount.)

Ref. No.	Part No.	Description	Remark
751	3-331-007-21	WASHER	
752	X-3943-732-1	TABLE ASSY, T REEL	
753	X-3943-733-1	TABLE ASSY, S REEL	
754	3-954-852-01	SPRING, TENSION	
755	3-954-870-01	HOLDER (S), SENSOR	
756	3-732-046-01	HOLDER, LED	
757	3-947-503-01	SCREW (M1.4X2.5)	
758	3-955-811-01	RETAINER, TG 9 ARM	
759	3-954-730-01	SPRING, TENSION	
760	X-3943-139-1	ARM ASSY, PINCH	
761	A-7040-368-A	ARM BLOCK ASSY, TG9	
762	3-954-729-01	SPRING, TORSION	
763	X-3943-731-1	GEAR ASSY, T SOFT	
764	3-954-853-01	ARM, T SOFT	
765	3-954-854-01	SPRING, TENSION	
766	3-954-850-01	RATCHET, T	
767	3-954-855-01	ARM, T SOFT RELEASE	
768	X-3943-134-1	ARM ASSY, TG1	
769	3-954-871-04	SPRING, TENSION	
770	1-649-039-11	FP-690 FLEXIBLE BOARD	
770	Not supplied	FP-317 FLEXIBLE BOARD	
771	3-954-887-01	HOLDER (T), SENSOR	
772	A-7040-379-E	CHASSIS SUB BLOCK ASSY, LS	
773	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
774	3-954-804-01	SPRING, LIMITER	
775	3-954-806-01	SPRING, TORSION	
776	3-954-805-01	ARM, T RATCHET RELEASE	
777	3-954-807-01	WASHER	
778	3-954-809-01	PLATE, CAM, LS	
* 779	3-957-931-02	RATCHET, S	
780	A-7053-657-A	FP-689 BOARD, COMPLETE	
780	A-7056-533-A	FP-316 BOARD, COMPLETE (included 770 (FP-317 FLEXIBLE BOARD))	
781	A-7018-186-A	MD ASSY (1)	
782	3-959-694-01	WASHER (LT), THRUST	
S001	1-572-288-31	SWITCH, PUSH (C.C. LOCK)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, ME/MP)	

5-1-10. MECHANISM CHASSIS ASSEMBLY (1)

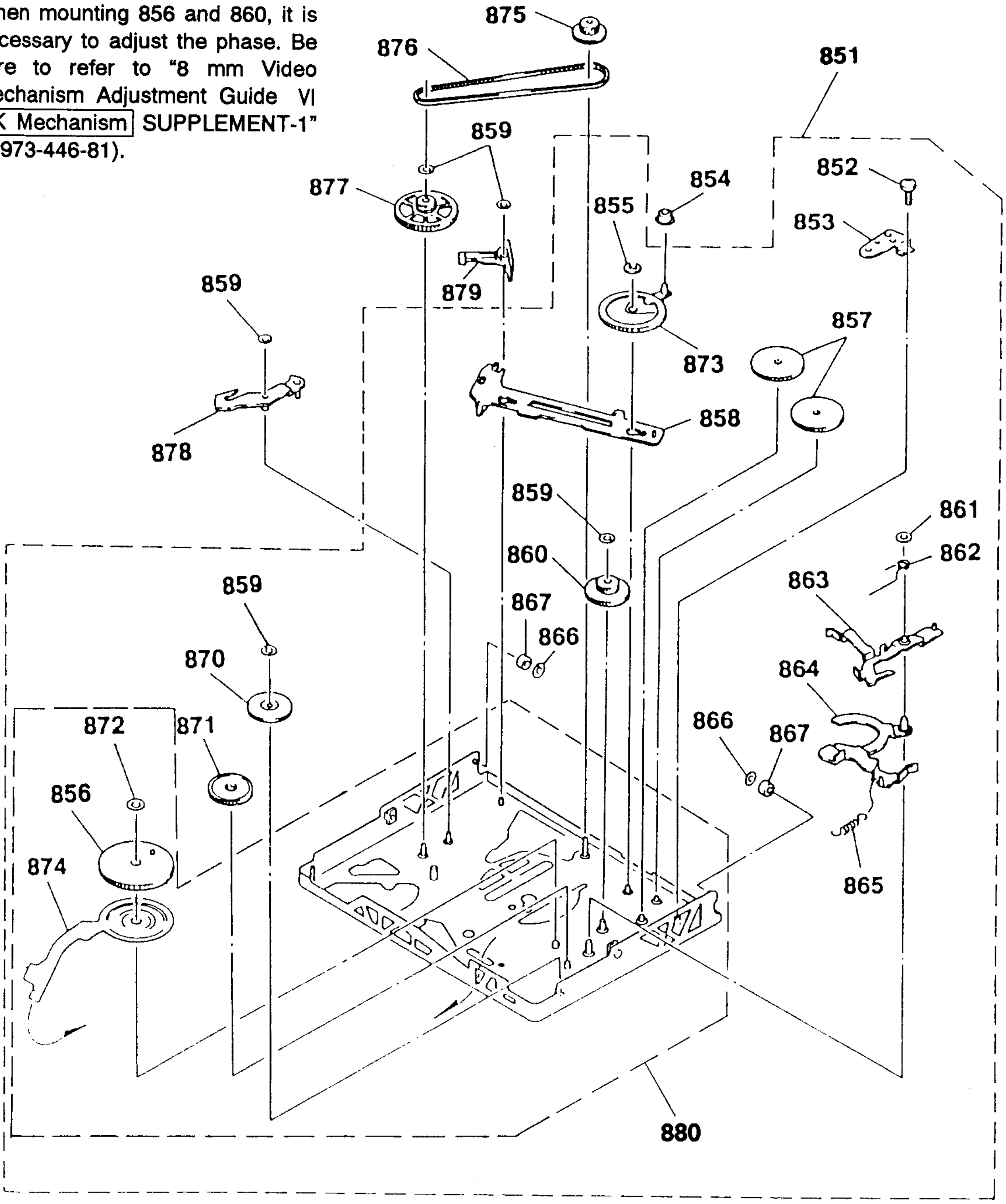
Note: Rotary upper drum assembly
There are two types of rotary upper drum assemblies and they can be distinguished by their color marks.
For replacing the rotary upper drum assembly, refer to "8 mm Video Mechanism Adjustment Guide VI " TK Mechanism (9-973-446-01).



Ref. No.	Part No.	Description	Remark
* 801	3-956-352-01	RETAINER, FLEXIBLE	
802	1-649-912-11	FP-94 FLEXIBLE BOARD	
* 803	3-956-057-01	BASE, HOLD	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	3-940-892-01	NUT, HEXAGON	
806	3-954-907-01	SPRING, COMPRESSION	
807	2-626-645-01	SCREW (M1.7), WAVE	
808	3-954-899-01	RAIL, T	
809	A-7040-375-A	COASTER (T) BLOCK ASSY (D)	
810	3-331-007-21	WASHER	
811	X-3943-149-1	ARM ASSY, S	
812	X-3943-150-1	ARM ASSY, T	
813	A-7040-391-D	COASTER (S) BLOCK ASSY (D2)	
814	3-954-898-01	RAIL, S	
815	3-954-739-01	ROLLER, LS GUIDE	
816	3-955-807-01	SCREW (M1.6 X 2)	
817	X-3943-128-1	HOLDER ASSY, MOTOR	
818	3-954-794-01	GEAR, WHEEL	
819	3-728-091-01	WASHER, STOPPER	
820	X-3943-146-3	ROLLER ASSY, TG3	
821	3-954-886-01	SPRING, COMPRESSION	
822	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
824	X-3943-151-2	SCREW ASSY, FITTING	
825	X-3945-656-1	BASE ASSY, DRUM	
826	3-961-170-01	CUSHION, D FLEXIBLE	
827	3-728-108-41	SCREW (M1.4X2.7)	
828	3-727-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
829	3-727-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
830	A-7049-495-A	DRUM ASSY, UPPER (DGR-89-R-(1))(TR3000) (COLOR MARK:GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-498-A	DRUM ASSY, UPPER (DGR-89-R-(2))(TR3000) (COLOR MARK:RED, RED/RED, BLUE, BLUE/RED)	
830	A-7049-461-A	DRUM ASSY, UPPER (DGR-80-R-(1))(TR3000E) (COLOR MARK:GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-464-A	DRUM ASSY, UPPER (DGR-80-R-(2))(TR3000E) (COLOR MARK:RED, RED/RED, BLUE, BLUE/RED)	
831	A-7049-668-A	MOTOR BLOCK ASSY (ROTOR)	
832	A-7049-564-A	MOTOR BLOCK ASSY (STATOR)	
833	3-957-868-01	RETAINER, DRUM	
M901	A-7048-714-A	DRUM ASSY (DGH-89F-R)(TR3000)	
M901	A-7048-716-A	DRUM ASSY (DGH-80E-R)(TR3000E)	
M902	8-835-498-12	MOTOR, DC SCE-0401A (CAPSTAN)	
M903	X-3943-127-1	MOTOR ASSY, L (LOADING)	

5-1-11. MECHANISM CHASSIS ASSEMBLY (2)

Note: When mounting 856 and 860, it is necessary to adjust the phase. Be sure to refer to "8 mm Video Mechanism Adjustment Guide VI TK Mechanism SUPPLEMENT-1" (9-973-446-81).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Ref. No.	Part No.	Description	Remark
851	A-7040-378-A	CHASSIS SUB BLOCK ASSY, MECH	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
* 853	3-954-744-01	RETAINER, GEAR	
854	3-957-367-01	ROLLER, LS GUIDE (2)	
855	3-578-254-00	RING, RETAINING, E1.2	
856	X-3943-124-1	GEAR ASSY, MODE	
857	3-954-747-01	GEAR (D)	
858	3-954-748-01	SLIDER, M	
859	3-331-007-21	WASHER	
860	3-954-746-01	GEAR (C)	
861	3-955-804-01	WASHER	
862	3-954-791-01	SPRING, TORSION COIL	
863	3-964-954-01	ARM (VA), MODE	
864	X-3943-126-1	ARM (2) ASSY, MODE	
866	3-331-007-11	WASHER	
867	3-954-742-01	ROLLER, LS	
870	3-954-749-01	GEAR (A)	
871	3-954-750-01	GEAR (B)	
872	3-579-788-01	WASHER, STOPPER	
873	3-954-752-01	GEAR, LS	
874	1-649-038-11	FP-685 FLEXIBLE BOARD	
875	3-957-929-01	PULLEY, RELAY	
876	3-954-789-01	BELT, RELAY	
877	X-3943-123-1	GEAR ASSY, CONVERSION	
878	X-3943-336-1	ARM ASSY, PINCH RELEASE	
879	3-954-741-01	ARM, EJ	
880	A-7040-424-A	CHASSIS SUB BLOCK ASSY	

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Canadian model is abbreviated as CND.

Ref.No.	Part No.	Description	Remark
*	A-7072-369-A	CD-135P BOARD, COMPLETE (TR3000E) **********************************	
*	A-7072-406-A	CD-135 BOARD, COMPLETE (TR3000) ********************************	
		(Ref.No. 1,000 Series)	
		< CAPACITOR >	
C201	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C202	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	
C202	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C203	1-164-346-11	CERAMIC CHIP 1uF 16V	
C205	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
		< IC >	
IC201	A-7030-615-A	CCD BLOCK ASSY (ICX-079AK-1)(CCD IMAGER) (TR3000E)	
IC201	A-7030-634-A	CCD BLOCK ASSY (ICX-078AK-1)(CCD IMAGER) (TR3000)	
		< COIL >	
L201	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q201	8-729-232-86	TRANSISTOR 2SK1875-BL/V	
Q202	8-729-117-73	TRANSISTOR 2SC4178-F14	
		< RESISTOR >	
R201	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R202	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R204	1-216-857-11	METAL CHIP 1M 5% 1/16W	
		< FLEXIBLE BOARD >	
W201	1-657-197-11	FP-257 FLEXIBLE BOARD	

Be sure to read "Note on the CCD Imager replacement" on page 4–6 when changing the CCD imager.

Ref.No.	Part No.	Description	Remark
*	A-7072-373-A	CZ-2 BOARD, COMPLETE (TR3000E) *******************************	
*	A-7072-410-A	CZ-2 BOARD, COMPLETE (TR3000) ******************************	
		(Ref.No. 1,000 Series)	
		< CONNECTOR >	
CN991	1-774-024-21	CONNECTOR, FFC/FPC (ZIF) 34P	
CN992	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN993	1-766-350-21	CONNECTOR, FFC/FPC 20P	
*	A-7072-371-A	EZ-16P BOARD, COMPLETE (TR3000E) ********************************	
*	A-7072-408-A	EZ-16 BOARD, COMPLETE (TR3000) ******************************	
		(Ref.No. 1,000 Series)	
		< CAPACITOR >	
C101	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C102	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C103	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN101	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN102	1-573-927-11	CONNECTOR, FFC/FPC (ZIF) 18P	
CN103	1-537-439-11	TARMINAL BOARD, CONNECTOR	
		< DIODE >	
D101	8-719-050-43	DIODE MA7Z0330LLLA	
D102	8-719-421-67	DIODE MA132WK	
D103	8-719-404-46	DIODE MA110	
D105	8-719-421-27	DIODE MA728	
D106	8-719-421-27	DIODE MA728	
D108	8-719-045-87	DIODE MA4Z082WA-TX	
D109	8-719-045-87	DIODE MA4Z082WA-TX	
D110	8-719-045-87	DIODE MA4Z082WA-TX	
D111	8-719-045-87	DIODE MA4Z082WA-TX	
D112	8-719-420-14	DIODE MA8082-M	
D114	8-719-045-87	DIODE MA4Z082WA-TX	

Ref. No.	Part No.	Description	Remark
D115	8-719-045-87	DIODE MA4Z082WA-TX	
D116	8-719-045-87	DIODE MA4Z082WA-TX	
D117	8-719-045-87	DIODE MA4Z082WA-TX	
D118	8-719-045-87	DIODE MA4Z082WA-TX	
D119	8-719-045-87	DIODE MA4Z082WA-TX	
D120	8-719-045-87	DIODE MA4Z082WA-TX	
D123	8-719-045-87	DIODE MA4Z082WA-TX	
		< IC >	
IC101	8-759-510-73	IC BA10393F-E2	
		< COIL >	
L101	1-414-117-11	INDUCTOR 1uH	
L102	1-414-117-11	INDUCTOR 1uH	
L103	1-414-117-11	INDUCTOR 1uH	
		< TRANSISTOR >	
Q101	8-729-425-50	TRANSISTOR 2SB1462Q	
Q102	8-729-427-72	TRANSISTOR XP4501	
Q103	8-729-427-70	TRANSISTOR XP4401	
Q104	8-729-429-32	TRANSISTOR UN9210-QRS	
Q105	8-729-429-18	TRANSISTOR UN9213	
Q106	8-729-429-18	TRANSISTOR UN9213	
Q108	8-729-427-46	TRANSISTOR XP4213	
Q109	8-729-428-88	TRANSISTOR UN9113	
Q110	8-729-425-50	TRANSISTOR 2SB1462Q	
Q111	8-729-014-65	TRANSISTOR RN2904	
Q112	8-729-429-18	TRANSISTOR UN9213	
Q115	8-729-429-02	TRANSISTOR UN9110-QRS	
Q120	8-729-429-32	TRANSISTOR UN9210-QRS	
Q121	8-729-429-18	TRANSISTOR UN9213	
		< RESISTOR >	
R101	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R102	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R103	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R104	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R105	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R106	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R107	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R108	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R109	1-216-818-11	METAL CHIP 560 5% 1/16W	
R110	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R111	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R112	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R114	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R115	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R116	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R117	1-216-864-11	METAL CHIP 0 5% 1/16W	
R119	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R120	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R121	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R126	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R128	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R129	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R130	1-216-854-11	METAL CHIP 560K 5% 1/16W	
R131	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R132	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R133	1-216-809-11	METAL CHIP 100 5% 1/16W	
R134	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R135	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R136	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R137	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R142	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R143	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R144	1-216-813-11	METAL CHIP 220 5% 1/16W	
R145	1-216-813-11	METAL CHIP 220 5% 1/16W	
R146	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R147	1-216-296-91	CONDUCTOR, CHIP (3216)	
R148	1-216-296-91	CONDUCTOR, CHIP (3216)	
R150	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< FLEXIBLE BOARD >	
W104	1-653-838-11	FP-185 FLEXIBLE BOARD	

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* A-7056-533-A FP-316 BOARD, COMPLETE
****
(FP-317 BOARD is included in FP-316 BOARD, COMPLETE)

* A-7053-657-A FP-689 BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description	Remark
	3-732-046-01	HOLDER, LED	
	3-954-870-01	HOLDER (S), SENSOR	
	3-954-887-01	HOLDER (T), SENSOR	
		< DIODE >	
D001	8-719-988-42	DIODE GL453S	
		< HALL ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q002	8-729-907-25	TRANSISTOR PT4850F	
Q003	8-729-907-25	TRANSISTOR PT4850F	

FP-316 FP-689 FU-125 LB-41

Ref.No.	Part No.	Description	Remark
		< RESISTOR >	
R001	1-216-817-11	METAL CHIP 470 5% 1/16W	
R002	1-216-817-11	METAL CHIP 470 5% 1/16W	
R003	1-216-817-11	METAL CHIP 470 5% 1/16W	
R004	1-216-817-11	METAL CHIP 470 5% 1/16W	
		< SWITCH >	
S001	1-572-288-11	SWITCH, PUSH (CC LOCK)(FP-316)	
S001	1-572-288-31	SWITCH, PUSH (CC LOCK)(FP-689)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(TAPE SELECT)	

Ref.No.	Part No.	Description	Remark
*	A-7072-374-A	FU-125P BOARD, COMPLETE (TR3000E) **********************************	
*	A-7072-411-A	FU-125 BOARD, COMPLETE (TR3000) ********************************	
		< CAPACITOR >	
C001	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C002	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C003	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		< CONNECTOR >	
* CN001	1-580-756-21	PIN, CONNECTOR 7P	
CN002	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
		< FUSE >	
⚠F001	1-576-212-21	FUSE (SMD)(1.25A 125V)(TR3000)	
⚠F002	1-576-212-21	FUSE (SMD)(1.25A 125V)(TR3000)	
⚠F003	1-576-212-21	FUSE (SMD)(1.25A 125V)(TR3000)	
		< IC LINK >	
⚠PS001	1-533-283-21	LINK, CHIP IC (1.25A 125V)(TR3000E)	
⚠PS002	1-533-283-21	LINK, CHIP IC (1.25A 125V)(TR3000E)	
⚠PS003	1-533-283-21	LINK, CHIP IC (1.25A 125V)(TR3000E)	
		< TRANSISTOR >	
Q001	8-729-024-24	TRANSISTOR 2SK2154-TL	
Q002	8-729-024-24	TRANSISTOR 2SK2154-TL	
		< RESISTOR >	
R001	1-216-845-11	METAL CHIP 100K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
*	A-7072-375-A	LB-41 BOARD, COMPLETE (TR3000E) ********************************	
*	A-7072-412-A	LB-41 BOARD, COMPLETE (TR3000) ******************************* (Ref.No. 4,000 Series)	
	3-965-053-01	SPACER, BL	
		< FLUORESCENT TUBE >	
BL801	1-519-746-91	TUBE, FLUORESCENT (0.7 INCH)	
		< CAPACITOR >	
C801	1-104-917-11	TANTAL. CHIP 15uF 20% 20V	
C802	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C803	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C804	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C805	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C806	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
		< CONNECTOR >	
* CN801	1-573-333-21	CONNECTOR, BOARD TO BOARD 10P	
		< DIODE >	
D801	8-719-049-57	DIODE CL-170B-X-T	
		< COIL >	
L801	1-412-032-11	INDUCTOR CHIP 100uH	
L802	1-412-029-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q801	8-729-024-60	TRANSISTOR MTD6N15T4	
		< RESISTOR >	
R802	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		< TRANSFORMER >	
T801	1-426-848-51	TRANSFORMER, INVERTER (TR3000)	
T801	1-426-849-31	TRANSFORMER, INVERTER (TR3000E)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref.No.	Part No.	Description			Remark
*	A-7072-378-A	MA-235 BOARD, COMPLETE (TR3000E) *********************************			
*	A-7072-415-A	MA-235 BOARD, COMPLETE (TR3000) *********************************			
		(Ref.No. 1,000 Series)			
		< CAPACITOR >			
C511	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C512	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C513	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C514	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C515	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C516	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C517	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C518	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C519	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C520	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C521	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C522	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C523	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C524	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C525	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C531	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C532	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C533	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C534	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C535	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C536	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C537	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C538	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C539	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C540	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C541	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C542	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C543	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C544	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C545	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C551	1-163-014-00	CERAMIC CHIP	0.0027uF	10%	50V
C552	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C553	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C555	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C556	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C557	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C558	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C559	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C560	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C561	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C562	1-163-014-00	CERAMIC CHIP	0.0027uF	10%	50V
C563	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C564	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V

Ref.No.	Part No.	Description			Remark
C565	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C567	1-164-346-11	CERAMIC CHIP	1uF		16V
C571	1-164-346-11	CERAMIC CHIP	1uF		16V
C572	1-164-346-11	CERAMIC CHIP	1uF		16V
C573	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C574	1-164-346-11	CERAMIC CHIP	1uF		16V
C575	1-164-346-11	CERAMIC CHIP	1uF		16V
C591	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C592	1-164-346-11	CERAMIC CHIP	1uF		16V
		< CONNECTOR >			
* CN501	1-580-055-21	PIN, CONNECTOR 2P			
* CN502	1-580-055-21	PIN, CONNECTOR 2P			
* CN503	1-580-055-21	PIN, CONNECTOR 2P			
CN504	1-573-523-21	CONNECTOR, BOARD TO BOARD 16P			
* CN505	1-580-055-21	PIN, CONNECTOR 2P			
		< DIODE >			
D501	8-719-404-46	DIODE MA110			
D502	8-719-420-14	DIODE MA8082-M			
D581	8-719-951-20	LED BR1102W			
D582	8-719-404-46	DIODE MA110			
		< IC >			
IC501	8-759-248-31	IC BA7780KV-E2			
IC502	8-749-923-29	IC RS-20E-T			
		< JACK >			
J501	1-691-737-11	JACK (SMALL TYPE)(MIC)			
		< COIL >			
L501	1-216-295-91	CONDUCTOR, CHIP (2012)			
L502	1-216-295-91	CONDUCTOR, CHIP (2012)			
L503	1-216-295-91	CONDUCTOR, CHIP (2012)			
L504	1-412-991-11	INDUCTOR 10uH			
L505	1-412-991-11	INDUCTOR 10uH			
L506	1-412-991-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q501	8-729-025-16	TRANSISTOR UN511D-TX			
		< RESISTOR >			
R511	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R512	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R513	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R514	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R515	1-216-833-11	METAL CHIP	10K	5%	1/16W
R516	1-216-833-11	METAL CHIP	10K	5%	1/16W
R517	1-216-839-11	METAL CHIP	33K	5%	1/16W

Ref.No.	Part No.	Description	Remark
R518	1-216-864-11	METAL CHIP 0 5% 1/16W	
R519	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R520	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R521	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R522	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R523	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R532	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R533	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R534	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R535	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R536	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R537	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R538	1-216-864-11	METAL CHIP 0 5% 1/16W	
R539	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R540	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R541	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R542	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R543	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R551	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R552	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R553	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R554	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R555	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R556	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R557	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R558	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R559	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R560	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R562	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R563	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R569	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R570	1-216-295-91	CONDUCTOR, CHIP (2012)	
R574	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R575	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R576	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R577	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R578	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R581	1-216-819-11	METAL CHIP 680 5% 1/16W	
R592	1-216-818-11	METAL CHIP 560 5% 1/16W	
R595	1-216-839-11	METAL CHIP 33K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
*	A-7072-370-A	SE-42P BOARD, COMPLETE (TR3000E)	
		*********************************	
*	A-7072-407-A	SE-42 BOARD, COMPLETE (TR3000)	
		*******************************	
		(Ref.No. 1,000 Series)	
		< CAPACITOR >	
C401	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	
C403	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	
C404	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C405	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C406	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C407	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C407	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C408	1-104-760-11	CERAMIC CHIP 0.047uF 10% 50V	
C408	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C409	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C410	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C411	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C412	1-104-760-11	CERAMIC CHIP 0.047uF 10% 50V	
C412	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C413	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C414	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C415	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C415	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C416	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C416	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C417	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C418	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
		< CONNECTOR >	
CN401	1-766-336-21	CONNECTOR, FFC/FPC 6P	
		< IC >	
IC401	8-759-080-34	IC TA75W01FU-TE12R	
IC402	8-759-058-45	IC NJM3403AV (TE2)	
IC403	8-759-234-77	IC TC4S66F	
IC404	8-759-234-77	IC TC4S66F	
		< RESISTOR >	
R402	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R403	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R404	1-216-803-11	METAL CHIP 33 5% 1/16W	
R405	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R406	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R407	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R408	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R409	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R410	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R411	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	

Ref.No.	Part No.	Description			Remark
R412	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R413	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R414	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R415	1-216-833-11	METAL CHIP	10K	5%	1/16W
R416	1-216-850-11	METAL CHIP	270K	5%	1/16W
R417	1-216-850-11	METAL CHIP	270K	5%	1/16W
R418	1-216-833-11	METAL CHIP	10K	5%	1/16W
R419	1-216-835-11	METAL CHIP	15K	5%	1/16W
R420	1-216-835-11	METAL CHIP	15K	5%	1/16W

< SENSOR >

Ref.No.	Part No.	Description
SE401	1-810-889-11	SENSOR, ANGULAR VELOCITY
SE402	1-810-889-21	SENSOR, ANGULAR VELOCITY

* A-7066-595-A VC-162 BOARD, COMPLETE (TR3000E)
****

* A-7066-649-A VC-162 BOARD, COMPLETE (TR3000)
****

(Ref.No. 2,000 Series)

Ref.No.	Part No.	Description
	1-657-198-11	FP-258 FLEXIBLE BOARD
	1-657-199-11	FP-259 FLEXIBLE BOARD

< CAPACITOR >

Ref.No.	Part No.	Description			Remark
C352	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C353	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C354	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C355	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C357	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR3000E)
C358	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR3000E)
C371	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C372	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C373	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C374	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C375	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C376	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C377	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C378	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C379	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C380	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C381	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C601	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C602	1-162-638-11	CERAMIC CHIP	1uF		16V
C603	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C604	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C605	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C608	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C609	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C610	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C614	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C617	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C618	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C619	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C620	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C621	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C622	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C623	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C624	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C628	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C630	1-164-346-11	CERAMIC CHIP	1uF		16V
C631	1-164-346-11	CERAMIC CHIP	1uF		16V
C632	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR3000)
C633	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR3000)
C634	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR3000)
C636	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C637	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C638	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C652	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C653	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C654	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C655	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C658	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C659	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C660	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C661	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C662	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR3000E)
C663	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C664	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C665	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C666	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C667	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C671	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C672	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C673	1-162-918-11	CERAMIC CHIP	18PF	5%	50V (TR3000E)
C673	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TR3000)
C674	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C675	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C676	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C677	1-164-156-11	CERAMIC CHIP	0.1uF		25V

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Ref. No.	Part No.	Description	Remark
C678	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C680	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C681	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C731	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C732	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C733	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C734	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C735	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C736	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C737	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C751	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C753	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	
C754	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	
C755	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C756	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C757	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C758	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C759	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C760	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C761	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C762	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C767	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C768	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C769	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C770	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C772	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V	
C773	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C774	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C775	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C776	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C777	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C778	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C779	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C780	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C781	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
		< CONNECTOR >	
CN371	1-766-336-21	CONNECTOR, FFC/FPC 6P	
CN372	1-764-530-21	CONNECTOR, FFC/FPC (ZIF) 23P	
CN601	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN653	1-766-658-21	CONNECTOR, FFC/FPC 22P	
CN654	1-766-658-21	CONNECTOR, FFC/FPC 22P	
CN751	1-766-343-21	CONNECTOR, FFC/FPC 13P	
		< TRIMMER >	
CT601	1-141-356-11	CAP, ADJ	
		< DIODE >	
D601	8-719-404-46	DIODE MA110	

Ref. No.	Part No.	Description	Remark
D601	8-719-404-49	DIODE MA111	
		< FILTER >	
FL651	1-239-352-11	FILTER, LOW PASS	
		< IC >	
IC352	8-759-297-76	IC CXD2152AREL	
IC353	8-759-281-20	IC CXD2149R	
IC354	8-759-357-69	IC CXD2159TM	
IC355	8-752-378-01	IC CXD2179BR-T6 (TR3000E)	
IC356	8-759-336-97	IC ZA4039-ELL500 (TR3000E)	
IC371	8-759-075-97	IC LM358PW	
IC372	8-759-059-03	IC LM324PW	
IC601	8-752-372-14	IC CXD1267AN	
IC602	8-752-374-25	IC CXD2415R	
IC603	8-752-073-11	IC CXA2006Q	
IC604	8-752-373-69	IC CXD2407BR	
IC605	8-759-331-07	IC AD43021-REEL (TR3000E)	
IC605	8-759-335-30	IC HD49315AFEB (TR3000)	
IC651	8-759-064-36	IC MB88346BPFV	
IC651	8-759-635-27	IC M62352GP	
IC652	8-752-376-21	IC CXD2151AR	
IC653	8-759-359-90	IC MC68HC11MA8FU-SC424621FU	
IC655	8-752-374-94	IC CXD2150BR	
IC656	8-759-262-36	IC CXD2133BR	
IC657	8-759-278-57	IC AK6420HF	
IC731	8-759-247-07	IC MPC17A34VMEL	
IC733	8-752-376-00	IC CXD2429Q	
IC751	8-759-059-03	IC LM324PW	
IC752	8-759-058-45	IC NJM3403AV	
IC753	8-759-058-41	IC NJM3416V	
IC754	8-759-058-41	IC NJM3416V	
IC755	8-759-248-78	IC MB88102PFV-G-BND-ER	
IC757	8-759-050-51	IC SN74HCT04APW-E20	
IC758	8-752-865-18	IC CXP81120-011R	
		< COIL >	
L352	1-414-078-11	INDUCTOR 10uH	
L353	1-414-078-11	INDUCTOR 10uH	
L354	1-414-078-11	INDUCTOR 10uH (TR3000E)	
L371	1-414-078-11	INDUCTOR 10uH	
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L602	1-412-058-11	INDUCTOR CHIP 10uH	
L603	1-414-078-11	INDUCTOR 10uH	
L604	1-414-078-11	INDUCTOR 10uH	
L605	1-414-078-11	INDUCTOR 10uH	
L651	1-414-078-11	INDUCTOR 10uH	
L652	1-414-078-11	INDUCTOR 10uH	
L653	1-414-078-11	INDUCTOR 10uH	
L654	1-412-961-11	INDUCTOR 68uH	

Ref. No.	Part No.	Description	Remark
L655	1-414-078-11	INDUCTOR 10uH	
L656	1-414-078-11	INDUCTOR 10uH	
L657	1-412-052-21	INDUCTOR CHIP 1uH	
L658	1-412-052-21	INDUCTOR CHIP 1uH	
L659	1-412-979-21	INDUCTOR 1uH	
L660	1-412-052-21	INDUCTOR CHIP 1uH	
L661	1-412-979-21	INDUCTOR 1uH	
L731	1-414-078-11	INDUCTOR 10uH	
L732	1-412-062-11	INDUCTOR CHIP 47uH	
L751	1-412-058-11	INDUCTOR CHIP 10uH	
L752	1-414-078-11	INDUCTOR 10uH	
L753	1-414-078-11	INDUCTOR 10uH	
L754	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q371	8-729-428-93	TRANSISTOR UN9115-QRS	
Q372	8-729-425-64	TRANSISTOR 2SD2216Q	
Q373	8-729-425-64	TRANSISTOR 2SD2216Q	
Q651	8-729-425-50	TRANSISTOR 2SB1462Q	
Q652	8-729-425-50	TRANSISTOR 2SB1462Q	
Q653	8-729-425-64	TRANSISTOR 2SD2216Q	
Q654	8-729-425-64	TRANSISTOR 2SD2216Q	
Q751	8-729-429-18	TRANSISTOR UN9213	
		< RESISTOR >	
R350	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R351	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R352	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R353	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R354	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R355	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R356	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R357	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R360	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R361	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R362	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R363	1-218-990-11	CONDUCTOR, CHIP (1005)	
R371	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R372	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R373	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R374	1-216-001-00	METAL CHIP 10 5% 1/10W	
R375	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R376	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R377	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R378	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R379	1-218-980-11	METAL GLAZE 180K 5% 1/16W	
R380	1-218-980-11	METAL GLAZE 180K 5% 1/16W	
R381	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R382	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R383	1-218-983-11	METAL GLAZE 330K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R384	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R385	1-218-956-11	METAL GLAZE 1.8K 5% 1/16W	
R386	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R387	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R388	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R389	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R390	1-218-907-11	METAL CHIP 330K 0.50% 1/16W	
R391	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R392	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R393	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R601	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R602	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R603	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R604	1-218-935-11	METAL GLAZE 33 5% 1/16W	
R605	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R610	1-218-972-11	METAL GLAZE 39K 5% 1/16W	(TR3000)
R611	1-218-935-11	METAL GLAZE 33 5% 1/16W	
R612	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R613	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R614	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R615	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R617	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R618	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R651	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R652	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R653	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R654	1-218-990-11	CONDUCTOR, CHIP (1005)	
R655	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R657	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R658	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R659	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R660	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R661	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000E)
R662	1-218-969-11	METAL GLAZE 22K 5% 1/16W	(TR3000E)
R662	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R663	1-218-990-11	CONDUCTOR, CHIP (1005)	
R664	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000E)
R665	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R666	1-218-976-11	METAL GLAZE 82K 5% 1/16W	(TR3000E)
R667	1-218-966-11	METAL GLAZE 12K 5% 1/16W	
R668	1-202-974-11	METAL GLAZE 3.3M 5% 1/16W	(TR3000E)
R669	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R670	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R671	1-218-966-11	METAL GLAZE 12K 5% 1/16W	
R673	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R674	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R675	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R676	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R677	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R678	1-218-953-11	METAL GLAZE 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R679	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R680	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R681	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R681	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000)
R682	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R683	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R684	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R685	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R686	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R687	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R688	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R689	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R690	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R691	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R692	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R693	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R694	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R695	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R696	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R697	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R698	1-218-990-11	CONDUCTOR, CHIP (1005)	
R700	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R701	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R702	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R703	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R704	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R705	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R706	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R707	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R708	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R709	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R710	1-218-990-11	CONDUCTOR, CHIP (1005)	
R731	1-218-990-11	CONDUCTOR, CHIP (1005)	
R732	1-218-990-11	CONDUCTOR, CHIP (1005)	
R733	1-218-990-11	CONDUCTOR, CHIP (1005)	
R734	1-218-990-11	CONDUCTOR, CHIP (1005)	
R735	1-218-990-11	CONDUCTOR, CHIP (1005)	
R736	1-218-990-11	CONDUCTOR, CHIP (1005)	
R737	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R738	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R751	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R753	1-218-990-11	CONDUCTOR, CHIP (1005)	
R754	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
R755	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
R757	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R758	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R759	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R760	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R761	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R762	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R763	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R764	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R765	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R766	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R767	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R768	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R769	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R770	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R771	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R772	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R773	1-218-859-11	METAL CHIP 3.3K 0.50% 1/16W	
R774	1-218-859-11	METAL CHIP 3.3K 0.50% 1/16W	
R776	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R778	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R779	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R780	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R781	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R782	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R785	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R786	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R787	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R788	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R789	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X601	1-760-320-11	VIBRATOR, CRYSTAL (28.636MHz)	(TR3000)
X601	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	(TR3000E)
X651	1-760-081-21	VIBRATOR, CERAMIC (24MHz)	
X751	1-579-553-11	VIBRATOR (12MHz)	

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* A-7072-376-A VF-80 BOARD, COMPLETE (TR3000E)
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* A-7072-413-A VF-80 BOARD, COMPLETE (TR3000)
****
(Ref. No. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C851	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C852	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C853	1-104-916-11	TANTAL. CHIP 6.8uF 20% 20V	
C854	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C855	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C856	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C857	1-164-676-11	CERAMIC CHIP 2200PF 5% 16V	
C858	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C859	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C860	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C865	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C866	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	

Ref.No.	Part No.	Description	Remark
C867	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C868	1-165-128-11	CERAMIC CHIP 0.22uF 16V	
C869	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C870	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C871	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C872	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C873	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C874	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C875	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C876	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C877	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C878	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C879	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
		< CONNECTOR >	
CN851	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN852	1-766-350-21	CONNECTOR, FFC/FPC 20P	
CN853	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P	
		< DIODE >	
D851	8-719-989-22	DIODE CL-150R-CD	
D852	8-719-043-70	DIODE MA6S121	
D853	8-719-802-36	DIODE 1SS250	
		< IC >	
IC851	8-759-097-75	IC MB3789PFV-G-BND-ER	
IC852	8-759-510-71	IC BA10358F	
IC853	8-759-080-34	IC TA75W01FU	
IC854	8-759-082-60	IC TC7S66FU	
IC855	8-759-338-78	IC BA10324AFV	
IC857	8-759-079-66	IC TC74VHC123AFS	
		< COIL >	
L853	1-412-033-11	INDUCTOR CHIP 220uH	
L854	1-412-951-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q851	8-729-822-05	TRANSISTOR 2SD1622-S	
Q852	8-729-427-72	TRANSISTOR XP4501	
Q853	8-729-924-19	TRANSISTOR DTA123JU	
Q854	8-729-427-70	TRANSISTOR XP4401	
Q855	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q856	8-729-905-96	TRANSISTOR DTA114TU	
Q857	8-729-426-30	TRANSISTOR XP1213	
Q858	8-729-426-30	TRANSISTOR XP1213	
Q859	8-729-026-52	TRANSISTOR 2SA1576A	
		< RESISTOR >	
R835	1-218-990-11	CONDUCTOR, CHIP (1005)	
R836	1-216-804-11	METAL CHIP 39 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R840	1-218-967-11	METAL GLAZE 15K 5% 1/16W	
R841	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R842	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R843	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R844	1-216-150-91	METAL GLAZE 10 5% 1/8W	
R845	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R846	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R847	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R849	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R850	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R851	1-216-819-11	METAL CHIP 680 5% 1/16W	
R852	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R853	1-218-899-11	METAL CHIP 150K 0.50% 1/16W	
R854	1-218-901-11	METAL CHIP 180K 0.50% 1/16W	
R855	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R856	1-218-899-11	METAL CHIP 150K 0.50% 1/16W	
R857	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R858	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R859	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R860	1-218-891-11	METAL CHIP 68K 0.50% 1/16W	
R861	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R862	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R863	1-218-986-11	METAL GLAZE 560K 5% 1/16W	
R864	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R865	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R867	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R868	1-218-990-11	CONDUCTOR, CHIP (1005)	
R869	1-218-975-11	METAL GLAZE 68K 5% 1/16W	
R870	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R871	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R872	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R873	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R874	1-218-979-11	METAL GLAZE 150K 5% 1/16W	
R875	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R876	1-216-810-11	METAL CHIP 120 5% 1/16W	
R877	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R878	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R879	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R880	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R881	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R882	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R883	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R884	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R885	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R886	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R887	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R888	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R889	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R890	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R891	1-216-296-91	CONDUCTOR, CHIP (3216)	

Ref. No.	Part No.	Description				Remark
R892	1-216-158-00	METAL GLAZE	22	5%	1/8W	
R893	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R894	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R895	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R896	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R897	1-216-864-11	METAL CHIP	0	5%	1/16W	
R898	1-218-974-11	METAL GLAZE	56K	5%	1/16W	
R899	1-218-977-11	METAL GLAZE	100K	5%	1/16W	

* A-7072-377-A VF-81 BOARD, COMPLETE (TR3000E)
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* A-7072-414-A VF-81 BOARD, COMPLETE (TR3000)
****
(Ref.No. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C901	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C902	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C903	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C904	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C905	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V	
C906	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C907	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C908	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C909	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C910	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C911	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C912	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	(TR3000E)
C913	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C914	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C915	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C916	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C917	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C918	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C920	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C921	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C922	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR3000E)
C923	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR3000E)
C924	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	(TR3000E)
C925	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C926	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C927	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C928	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	(TR3000E)
C928	1-163-077-91	CERAMIC CHIP	0.1uF		50V	(TR3000)
C929	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	(TR3000E)
C929	1-163-077-91	CERAMIC CHIP	0.1uF		50V	(TR3000)
C930	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	(TR3000E)
C930	1-163-077-91	CERAMIC CHIP	0.1uF		50V	(TR3000)
C931	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C932	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000)
C933	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C934	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V	
C935	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V	
C936	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C937	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C938	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C939	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C940	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C941	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V	
C942	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C943	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C947	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C948	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C949	1-135-178-11	TANTAL. CHIP	1.5uF	20%	20V	
C950	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C951	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C952	1-164-156-11	CERAMIC CHIP	0.1uF		25V	(TR3000E)
C953	1-164-346-11	CERAMIC CHIP	1uF		16V	
C954	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C956	1-162-974-11	CERAMIC CHIP	0.01uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description
CN901	1-766-346-21	CONNECTOR, FFC/FPC 16P
* CN902	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P
* CN903	1-573-925-11	CONNECTOR, FFC/FPC (ZIF) 16P

< DIODE >

Ref. No.	Part No.	Description		Remark
D901	8-713-102-80	DIODE	1T369-01-T8A	
D902	8-713-102-80	DIODE	1T369-01-T8A	(TR3000E)
D903	8-719-404-49	DIODE	MA111	

< IC >

Ref. No.	Part No.	Description	
IC901	8-752-070-03	IC	CXA1785AR
IC902	8-752-369-16	IC	CXD2411R
IC903	8-759-251-40	IC	MB88E346PFV-G-BND-ER
IC904	8-759-075-66	IC	TA75S01F

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-412-951-11	INDUCTOR 10uH	
L902	1-412-960-21	INDUCTOR 56uH	(TR3000E)
L902	1-412-962-11	INDUCTOR 82uH	(TR3000)
L903	1-412-956-21	INDUCTOR 27uH	(TR3000E)
L904	1-412-959-11	INDUCTOR 47uH	
L905	1-412-947-11	INDUCTOR 4.7uH	
L906	1-412-962-11	INDUCTOR 82uH	
L907	1-412-962-11	INDUCTOR 82uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q901	8-729-427-74	TRANSISTOR XP4601	
Q902	8-729-402-42	TRANSISTOR UN5213	
Q903	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(TR3000E)

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	
R902	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R903	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R904	1-218-986-11	METAL GLAZE 560K 5% 1/16W	
R905	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R906	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R907	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R908	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R910	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R911	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R912	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R913	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TR3000E)
R914	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R915	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R918	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	(TR3000E)
R919	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R920	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R921	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R922	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R923	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R924	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R924	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000)
R925	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R926	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R930	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R931	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R934	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R935	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R936	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R937	1-218-905-11	METAL CHIP 270K 0.50% 1/16W	
R938	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R939	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R940	1-218-990-11	CONDUCTOR, CHIP (1005)	
R943	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R945	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	(TR3000E)
R946	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R947	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R948	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R949	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R950	1-218-969-11	METAL GLAZE 22K 5% 1/16W	(TR3000E)
R953	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R954	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R955	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000E)
R959	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R960	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R961	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R962	1-218-990-11	CONDUCTOR, CHIP (1005)	
R969	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R970	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R971	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R973	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R974	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R975	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R976	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R979	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R980	1-218-990-11	CONDUCTOR, CHIP (1005)	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X901	1-579-466-11	VIBRATOR, CRYSTAL (3.58MHz)	(TR3000)
X901	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	(TR3000E)

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* A-7066-596-A VS-113 (H) BOARD, COMPLETE (TR3000E)
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* A-7066-650-A VS-113 (H) BOARD, COMPLETE (TR3000)
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(Ref.No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C001	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C002	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C003	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C004	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C005	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C006	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C007	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C008	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C009	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C010	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C011	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C012	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C013	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C014	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

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Ref. No.	Part No.	Description				Remark
C015	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C016	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C017	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C019	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C020	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C021	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C024	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C025	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C026	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C027	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C028	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C031	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C032	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C037	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C038	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C039	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C040	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C041	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C042	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C043	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C044	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C045	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C046	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C047	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C048	1-164-362-11	CERAMIC CHIP	470PF	5%	50V	
C050	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C051	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C052	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C054	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C057	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C058	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C059	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	
C060	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C061	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C063	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C064	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C065	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C066	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C067	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C068	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C071	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C072	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C073	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C076	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C077	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C078	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	(TR3000E)

Ref. No.	Part No.	Description				Remark
C078	1-162-924-11	CERAMIC CHIP	56PF	5%	50V	(TR3000)
C079	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C080	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	(TR3000)
C082	1-163-038-91	CERAMIC CHIP	0.1uF		25V	(TR3000)
C082	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(TR3000E)
C083	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	(TR3000E)
C083	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	(TR3000)
C084	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V	(TR3000E)
C084	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	(TR3000)
C085	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C086	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C087	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C088	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	(TR3000)
C088	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	(TR3000E)
C089	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C101	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C102	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C103	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C104	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C105	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C106	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C107	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C108	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	
C109	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C110	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C111	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C112	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C113	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C114	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C115	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C116	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C117	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C118	1-162-954-11	CERAMIC CHIP	120PF	5%	50V	
C119	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	(TR3000E)
C119	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR3000)
C120	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C121	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	
C122	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C123	1-164-460-11	CERAMIC CHIP	62PF	5%	50V	
C124	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	

Ref.No.	Part No.	Description				Remark
C125	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C126	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C127	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C129	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	(TR3000)
C129	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	(TR3000E)
C130	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C131	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	(TR3000E)
C131	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	(TR3000)
C132	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C133	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	(TR3000)
C133	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	(TR3000E)
C134	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C137	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C139	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C140	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	(TR3000E)
C141	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C142	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C143	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C144	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C145	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C146	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C147	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C148	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	
C150	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C151	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	
C152	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V	(TR3000)
C152	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	(TR3000E)
C153	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C154	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C155	1-164-238-11	CERAMIC CHIP	36PF	5%	50V	
C156	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C157	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C158	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C159	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	(TR3000E)
C159	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR3000)
C160	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	
C161	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	(TR3000E)
C161	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	(TR3000)

Ref.No.	Part No.	Description				Remark
C162	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	(TR3000)
C162	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR3000E)
C164	1-163-077-91	CERAMIC CHIP	0.1uF		50V	
C201	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	(TR3000E)
C201	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	(TR3000)
C202	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	
C203	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C204	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C205	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C206	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C207	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C210	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C211	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C212	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C213	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	(TR3000)
C213	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	(TR3000E)
C214	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C215	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	(TR3000)
C215	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	(TR3000E)
C216	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C217	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C218	1-135-338-11	TANTAL. CHIP	220uF	20%	4V	
C219	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	(TR3000)
C219	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	(TR3000E)
C221	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C223	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C224	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	(TR3000)
C224	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V	(TR3000E)
C225	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C226	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C227	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V	
C228	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C229	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C230	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	(TR3000)
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR3000E)
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C232	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	(TR3000)

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Ref.No.	Part No.	Description			Remark
C233	1-162-974-11	CERAMIC CHIP	0.01uF		50V (TR3000)
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C236	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C237	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C238	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C240	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C241	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C242	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V (TR3000)
C243	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V (TR3000)
C243	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR3000E)
C244	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C245	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C246	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C247	1-162-957-11	CERAMIC CHIP	220PF	5%	50V (TR3000)
C247	1-164-471-11	CERAMIC CHIP	680PF	5%	50V (TR3000E)
C248	1-162-926-11	CERAMIC CHIP	82PF	5%	50V (TR3000)
C248	1-162-928-11	CERAMIC CHIP	120PF	5%	50V (TR3000E)
C249	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C250	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C251	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C252	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C253	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C254	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C259	1-164-346-11	CERAMIC CHIP	1uF		16V
C261	1-107-682-11	CERAMIC CHIP	1uF	10%	16V (TR3000)
C261	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V (TR3000E)
C262	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C265	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C266	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C268	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C269	1-107-682-11	CERAMIC CHIP	1uF	10%	16V (TR3000)
C269	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V (TR3000E)
C270	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TR3000E)
C270	1-162-923-11	CERAMIC CHIP	47PF	5%	50V (TR3000)
C271	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C274	1-164-346-11	CERAMIC CHIP	1uF		16V
C275	1-107-682-11	CERAMIC CHIP	1uF	10%	16V (TR3000)
C275	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V (TR3000E)
C276	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C277	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C279	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C280	1-107-682-11	CERAMIC CHIP	1uF	10%	16V (TR3000)
C280	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V (TR3000E)
C281	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C283	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C284	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C286	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V (TR3000)
C286	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TR3000E)
C287	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C288	1-162-919-11	CERAMIC CHIP	22PF	5%	50V (TR3000)
C288	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR3000E)
C289	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR3000E)
C290	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TR3000E)
C291	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C292	1-162-956-11	CERAMIC CHIP	180PF	5%	50V (TR3000E)
C292	1-162-957-11	CERAMIC CHIP	220PF	5%	50V (TR3000)
C294	1-162-974-11	CERAMIC CHIP	0.01uF		50V (TR3000E)
C298	1-162-958-11	CERAMIC CHIP	270PF	5%	50V (TR3000)
C298	1-162-959-11	CERAMIC CHIP	330PF	5%	50V (TR3000E)
C300	1-162-924-11	CERAMIC CHIP	56PF	5%	50V (TR3000)
C300	1-162-955-11	CERAMIC CHIP	150PF	5%	50V (TR3000E)
C301	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TR3000E)
C302	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C303	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C304	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C305	1-162-974-11	CERAMIC CHIP	0.01uF		50V (TR3000E)
C306	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C307	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C309	1-162-956-11	CERAMIC CHIP	180PF	5%	50V (TR3000)

Ref. No.	Part No.	Description				Remark
C309	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	(TR3000E)
C310	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C311	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR3000E)
C311	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	(TR3000)
C312	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	
C313	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C314	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	(TR3000E)
C315	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	(TR3000)
C315	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	(TR3000E)
C316	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	(TR3000E)
C316	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	(TR3000)
C318	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C319	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C320	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C321	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C323	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	(TR3000E)
C325	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	(TR3000E)
C325	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	(TR3000)
C329	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR3000E)
C329	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	(TR3000)
C331	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	(TR3000E)
C332	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C381	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C382	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR3000E)
C383	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C384	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	(TR3000E)
C385	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR3000E)
C386	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR3000E)
C387	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	(TR3000E)
C388	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	(TR3000E)
C389	1-135-208-11	TANTAL. CHIP	1uF	20%	10V	(TR3000E)
C390	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	(TR3000E)
C391	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR3000E)
C392	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR3000E)
C407	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C410	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C411	1-165-112-11	CERAMIC CHIP	0.33uF		16V	
C412	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C413	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C414	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C415	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C420	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR3000E)
C423	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C424	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C425	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C428	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	(TR3000)
C428	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	(TR3000E)
C429	1-135-338-11	TANTAL. CHIP	220uF	20%	4V	
C432	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C434	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C435	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C436	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C437	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C438	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C439	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C440	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C442	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C443	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C481	1-162-638-11	CERAMIC CHIP	1uF		16V	(TR3000E)
C481	1-163-059-91	CERAMIC CHIP	0.01uF	10%	50V	(TR3000)
C491	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C501	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C502	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C503	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C504	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C505	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR3000E)
C506	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	
C507	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C509	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	

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Ref.No.	Part No.	Description				Remark
C510	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C511	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C512	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V	
C513	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C514	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C516	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	(TR3000E)
C516	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V	(TR3000)
C517	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	(TR3000E)
C517	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V	(TR3000)
C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C519	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C520	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C521	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	(TR3000)
C521	1-162-935-11	CERAMIC CHIP	4PF	0.25PF	50V	(TR3000E)
C523	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C524	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C525	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C526	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C527	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C528	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C530	1-164-346-11	CERAMIC CHIP	1uF		16V	
C531	1-164-346-11	CERAMIC CHIP	1uF		16V	
C532	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C534	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C535	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C536	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C537	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C538	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C539	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C540	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C541	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C542	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C543	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C545	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C546	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C548	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C551	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C552	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C553	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C554	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR3000E)
C554	1-162-995-11	CERAMIC CHIP	0.022uF		50V	(TR3000)
C555	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR3000E)
C555	1-162-995-11	CERAMIC CHIP	0.022uF		50V	(TR3000)
C556	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C557	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C558	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C561	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C562	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C563	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C564	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C565	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C703	1-107-685-11	TANTAL. CHIP	15uF	20%	6.3V	
C704	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C705	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C707	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C708	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C709	1-164-816-11	CERAMIC CHIP	220PF	2%	50V	
C710	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C711	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C712	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C713	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C714	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C715	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C716	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C717	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C718	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C719	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C720	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	(TR3000E)
C720	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	(TR3000)
C724	1-107-685-11	TANTAL. CHIP	15uF	20%	6.3V	
C725	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C802	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C803	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C804	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C807	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	
C808	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	
C811	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C813	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	
C814	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C815	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C816	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C818	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	
C819	1-104-848-11	TANTAL. CHIP	100uF	20%	4V	
C820	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C822	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C825	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V	
C827	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	

Ref. No.	Part No.	Description			Remark
C830	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C832	1-107-493-11	TANTAL. CHIP	47uF	20%	2.5V
C835	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C837	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C839	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C840	1-107-493-11	TANTAL. CHIP	47uF	20%	2.5V
C843	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C844	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C845	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C847	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C849	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C851	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C852	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C854	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C857	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (TR3000E)
C857	1-164-222-11	CERAMIC CHIP	0.22uF		25V (TR3000)
C858	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C860	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C861	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C862	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C865	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C868	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C870	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C872	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C882	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C910	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C951	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C952	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C953	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C954	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C955	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C956	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C957	1-164-730-11	CERAMIC CHIP	0.0012uF	10%	50V
C958	1-164-473-11	CERAMIC CHIP	820PF	10%	50V
C959	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C960	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C961	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C962	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C963	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C964	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C965	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C966	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C967	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C968	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C969	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C970	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C971	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C972	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C973	1-165-178-11	CERAMIC CHIP	6.8uF		16V

Ref. No.	Part No.	Description			Remark
C974	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C975	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C976	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C983	1-135-165-11	TANTAL. CHIP	33uF	20%	16V
C984	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C985	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C986	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C987	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C988	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C989	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C990	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C991	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C992	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C993	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C994	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C995	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C996	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C997	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
		< CONNECTOR >			
CN001	1-766-345-21	CONNECTOR, FFC/FPC 15P			
CN002	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P			
CN422	1-766-345-21	CONNECTOR, FFC/FPC 15P			
CN423	1-766-360-21	CONNECTOR, FFC/FPC 30P			
* CN501	1-580-055-21	PIN, CONNECTOR 2P			
CN502	1-766-345-21	CONNECTOR, FFC/FPC 15P			
CN503	1-764-704-21	CONNECTOR, FFC/FPC (LIF) 5P			
CN504	1-573-352-11	CONNECTOR, FFC/FPC 12P			
CN505	1-573-924-11	CONNECTOR, FFC/FPC (ZIF) 15P			
CN701	1-766-658-21	CONNECTOR, FFC/FPC 22P			
CN702	1-766-658-21	CONNECTOR, FFC/FPC 22P			
CN703	1-766-360-21	CONNECTOR, FFC/FPC 30P			
CN704	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN801	1-573-367-21	CONNECTOR, FFC/FPC 27P			
* CN951	1-580-756-21	PIN, CONNECTOR 7P			
		< DIODE >			
D001	8-719-404-46	DIODE	MA110		
D102	8-719-404-46	DIODE	MA110		
D102	8-719-404-49	DIODE	MA111		
D201	8-719-421-67	DIODE	MA132WK		
D202	8-719-421-67	DIODE	MA132WK		
D204	8-719-404-46	DIODE	MA110		
D205	8-719-421-67	DIODE	MA132WK		
D207	8-719-421-71	DIODE	MA132WA		
D208	8-719-421-71	DIODE	MA132WA		
D210	8-719-404-46	DIODE	MA110		
D211	8-719-404-46	DIODE	MA110 (TR3000E)		
D212	8-719-404-46	DIODE	MA110 (TR3000E)		
D213	8-719-421-67	DIODE	MA132WK		

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Ref. No.	Part No.	Description	Remark
D214	8-719-024-71	DIODE 1SS362	
D215	8-719-404-46	DIODE MA110	
D410	8-719-421-67	DIODE MA132WK	
D412	8-719-404-46	DIODE MA110	
D413	8-719-421-67	DIODE MA132WK	
D414	8-719-421-67	DIODE MA132WK	
D415	8-719-421-67	DIODE MA132WK	
D421	8-719-033-15	DIODE HN2D02FU	
D422	8-719-421-67	DIODE MA132WK	
D423	8-719-404-46	DIODE MA110	
D424	8-719-421-71	DIODE MA132WA	
D501	8-719-404-46	DIODE MA110	
D702	8-719-404-46	DIODE MA110	
D703	8-719-421-67	DIODE MA132WK	
D706	8-719-040-57	DIODE RD8.2UM-T1B2B3	
D707	8-719-421-27	DIODE MA728	
⚠D708	8-719-420-51	DIODE MA729	
D709	8-719-404-46	DIODE MA110	
D801	8-719-404-46	DIODE MA110	
D951	8-719-027-77	DIODE MA796	
D953	8-719-404-46	DIODE MA110	
		< FERRITE BEAD >	
FB501	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< FILTER >	
FL201	1-236-757-21	FILTER, LOW PASS (C)(TR3000)	
FL201	1-236-848-21	FILTER, LOW PASS (TR3000E)	
FL202	1-236-773-21	FILTER, LOW PASS (Y)(TR3000)	
FL202	1-239-010-11	FILTER, LOW PASS (CCD.PAL.Y)(TR3000E)	
FL203	1-239-112-21	FILTER, LOW PASS (Y)	
FL204	1-236-775-11	FILTER, LOW PASS (DEM)	
		< IC >	
IC001	8-752-071-76	IC CXA2004R	
IC071	8-759-279-82	IC CXD2127R	
IC101	8-752-058-02	IC CXA1509AR	
IC201	8-752-072-55	IC CXA1810AR	
IC202	8-752-053-21	IC CXA1211M	
IC203	8-752-351-22	IC CXL5502N (TR3000)	
IC203	8-752-351-95	IC CXL1506N (TR3000E)	
IC204	8-752-351-22	IC CXL5502N (TR3000)	
IC204	8-752-351-95	IC CXL1506N (TR3000E)	
IC205	8-752-053-21	IC CXA1211M	
IC206	8-759-070-51	IC SN74HCU04ADB	
IC381	8-759-261-32	IC M52358VP-610D (TR3000E)	
IC421	8-752-069-60	IC CXA1812Q-T4	
IC422	8-759-331-66	IC BA7627FV-E2	
IC481	8-759-336-96	IC uPD6461GS-814-GLG-E2	

Ref. No.	Part No.	Description	Remark
IC491	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC501	8-752-847-38	IC CXP87132-042R	
IC502	8-759-165-47	IC MPC1780VFUEB	
IC503	8-759-169-11	IC CXA1575M-E2	
IC504	8-759-267-62	IC MB4470APFQ-G-BND-ER	
⚠IC701	8-759-299-99	IC S-8423JFS-T2	
IC702	8-759-336-95	IC MB89098PFV-G-130-BND	
IC703	8-759-278-57	IC AK6420HF-E2	
IC704	8-759-031-58	IC SC7SU04F	
IC801	8-759-075-68	IC TC4066BFS-EL	
IC802	8-759-330-00	IC AN3988NFHP-EB	
IC951	8-759-295-31	IC MB3799-03PFV-G-BND-ER	
		< COIL >	
L001	1-412-066-21	INDUCTOR CHIP 220uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-058-11	INDUCTOR CHIP 10uH	
L004	1-412-951-11	INDUCTOR 10uH	
L005	1-412-066-21	INDUCTOR CHIP 220uH	
L006	1-412-948-11	INDUCTOR 5.6uH	
L107	1-412-960-21	INDUCTOR 56uH (TR3000E)	
L071	1-410-658-31	INDUCTOR CHIP 220uH	
L072	1-414-078-11	INDUCTOR 10uH	
L073	1-414-078-11	INDUCTOR 10uH	
L074	1-412-950-11	INDUCTOR 8.2uH	
L101	1-412-956-21	INDUCTOR 27uH	
L102	1-412-954-11	INDUCTOR 18uH	
L103	1-412-947-11	INDUCTOR 4.7uH	
L104	1-412-959-11	INDUCTOR 47uH	
L105	1-412-954-11	INDUCTOR 18uH	
L106	1-412-945-11	INDUCTOR 3.3uH	
L108	1-412-954-11	INDUCTOR 18uH	
L109	1-412-956-21	INDUCTOR 27uH	
L110	1-410-655-31	INDUCTOR CHIP 120uH	
L111	1-412-947-11	INDUCTOR 4.7uH	
L112	1-414-078-11	INDUCTOR 10uH	
L113	1-412-957-11	INDUCTOR 33uH	
L114	1-412-280-31	INDUCTOR 330uH	
L115	1-412-282-41	INDUCTOR 470uH	
L116	1-410-657-21	INDUCTOR CHIP 180uH	
L117	1-412-956-21	INDUCTOR 27uH (TR3000)	
L117	1-412-958-21	INDUCTOR 39uH (TR3000E)	
L118	1-412-949-21	INDUCTOR 6.8uH	
L119	1-412-951-11	INDUCTOR 10uH (TR3000)	
L119	1-412-952-11	INDUCTOR 12uH (TR3000E)	
L120	1-216-295-91	CONDUCTOR, CHIP (2012)	
L201	1-412-963-11	INDUCTOR 100uH	
L202	1-414-078-11	INDUCTOR 10uH	
L203	1-412-955-11	INDUCTOR 22uH (TR3000)	
L205	1-414-078-11	INDUCTOR 10uH	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
L206	1-412-957-11	INDUCTOR 33uH (TR3000E)	
L206	1-412-962-11	INDUCTOR 82uH (TR3000)	
L207	1-412-960-21	INDUCTOR 56uH (TR3000E)	
L208	1-412-952-11	INDUCTOR 12uH (TR3000E)	
L210	1-412-949-21	INDUCTOR 6.8uH (TR3000E)	
L210	1-412-951-11	INDUCTOR 10uH (TR3000)	
L211	1-216-295-91	CONDUCTOR, CHIP (2012)(TR3000)	
L211	1-412-947-11	INDUCTOR 4.7uH (TR3000E)	
L212	1-412-949-21	INDUCTOR 6.8uH	
L213	1-412-951-11	INDUCTOR 10uH (TR3000E)	
L213	1-412-953-11	INDUCTOR 15uH (TR3000)	
L214	1-412-957-11	INDUCTOR 33uH (TR3000E)	
L214	1-412-958-21	INDUCTOR 39uH (TR3000)	
L215	1-412-952-11	INDUCTOR 12uH (TR3000)	
L215	1-412-955-11	INDUCTOR 22uH (TR3000E)	
L216	1-412-946-11	INDUCTOR 3.9uH (TR3000)	
L216	1-412-949-21	INDUCTOR 6.8uH (TR3000E)	
L217	1-412-955-11	INDUCTOR 22uH (TR3000)	
L217	1-412-957-11	INDUCTOR 33uH (TR3000E)	
L219	1-412-957-11	INDUCTOR 33uH	
L502	1-414-078-11	INDUCTOR 10uH	
L503	1-414-078-11	INDUCTOR 10uH	
L504	1-414-078-11	INDUCTOR 10uH	
L505	1-412-961-11	INDUCTOR 68uH	
L701	1-412-959-11	INDUCTOR 47uH	
L951	1-409-529-21	COIL, CHOKE 10uH	
L952	1-409-529-21	COIL, CHOKE 10uH	
L953	1-409-529-21	COIL, CHOKE 10uH	
L954	1-409-531-11	COIL, CHOKE 22uH	
L955	1-409-531-11	COIL, CHOKE 22uH	
L956	1-409-531-11	COIL, CHOKE 22uH	
L957	1-409-531-11	COIL, CHOKE 22uH	
L958	1-409-532-21	COIL, CHOKE 33uH	
L959	1-412-056-11	INDUCTOR CHIP 4.7uH	
L960	1-412-056-11	INDUCTOR CHIP 4.7uH	
L961	1-412-056-11	INDUCTOR CHIP 4.7uH	
L962	1-412-056-11	INDUCTOR CHIP 4.7uH	
L963	1-412-056-11	INDUCTOR CHIP 4.7uH	
L964	1-412-056-11	INDUCTOR CHIP 4.7uH	
L965	1-412-056-11	INDUCTOR CHIP 4.7uH	
L966	1-412-056-11	INDUCTOR CHIP 4.7uH	
L967	1-412-066-21	INDUCTOR CHIP 220uH	
L971	1-412-056-11	INDUCTOR CHIP 4.7uH	
		< IC LINK >	
⚠PS951	1-576-123-21	LINK, IC (CCP2E20 0.8A)	
		< TRANSISTOR >	
Q001	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q002	8-729-429-18	TRANSISTOR UN9213	

Ref. No.	Part No.	Description	Remark
Q003	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q004	8-729-429-18	TRANSISTOR UN9213	
Q005	8-729-429-18	TRANSISTOR UN9213	
Q006	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q007	8-729-429-18	TRANSISTOR UN9213	
Q008	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q009	8-729-425-73	TRANSISTOR 2SC4627-C	
Q010	8-729-429-18	TRANSISTOR UN9213	
Q011	8-729-427-46	TRANSISTOR XP4213	
Q012	8-729-429-18	TRANSISTOR UN9213	
Q013	8-729-428-88	TRANSISTOR UN9113 (TR3000E)	
Q014	8-729-425-64	TRANSISTOR 2SD2216Q	
Q015	8-729-425-50	TRANSISTOR 2SB1462Q	
Q016	8-729-425-50	TRANSISTOR 2SB1462Q	
Q017	8-729-425-64	TRANSISTOR 2SD2216Q	
Q018	8-729-425-50	TRANSISTOR 2SB1462Q	
Q022	8-729-429-18	TRANSISTOR UN9213	
Q071	8-729-425-50	TRANSISTOR 2SB1462Q	
Q072	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q073	8-729-429-18	TRANSISTOR UN9213	
Q075	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q076	8-729-428-84	TRANSISTOR UN9111	
Q077	8-729-425-73	TRANSISTOR 2SC4627-C (TR3000E)	
Q077	8-729-927-XX	TRANSISTOR 2SC4617TL-QR (TR3000)	
Q102	8-729-429-18	TRANSISTOR UN9213	
Q103	8-729-425-64	TRANSISTOR 2SD2216Q	
Q106	8-729-429-18	TRANSISTOR UN9213	
Q108	8-729-429-18	TRANSISTOR UN9213	
Q109	8-729-425-64	TRANSISTOR 2SD2216Q	
Q110	8-729-425-64	TRANSISTOR 2SD2216Q	
Q111	8-729-425-64	TRANSISTOR 2SD2216Q	
Q112	8-729-425-73	TRANSISTOR 2SC4627-C	
Q113	8-729-425-50	TRANSISTOR 2SB1462Q	
Q114	8-729-425-73	TRANSISTOR 2SC4627-C	
Q115	8-729-429-18	TRANSISTOR UN9213	
Q117	8-729-429-18	TRANSISTOR UN9213	
Q118	8-729-425-64	TRANSISTOR 2SD2216Q	
Q119	8-729-028-13	TRANSISTOR 2SA1885-TL (TR3000)	
Q201	8-729-425-50	TRANSISTOR 2SB1462Q	
Q202	8-729-425-64	TRANSISTOR 2SD2216Q	
Q203	8-729-427-46	TRANSISTOR XP4213	
Q204	8-729-428-88	TRANSISTOR UN9113	
Q205	8-729-427-46	TRANSISTOR XP4213	
Q206	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q207	8-729-428-88	TRANSISTOR UN9113	
Q208	8-729-015-68	TRANSISTOR 2SC4922-TL	
Q209	8-729-015-68	TRANSISTOR 2SC4922-TL	
Q210	8-729-425-50	TRANSISTOR 2SB1462Q	
Q211	8-729-425-64	TRANSISTOR 2SD2216Q	
Q212	8-729-429-18	TRANSISTOR UN9213	

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Ref. No.	Part No.	Description	Remark
Q213	8-729-427-72	TRANSISTOR XP4501	
Q214	8-729-427-46	TRANSISTOR XP4213	
Q216	8-729-425-64	TRANSISTOR 2SD2216Q	
Q217	8-729-428-88	TRANSISTOR UN9113 (TR3000E)	
Q218	8-729-427-46	TRANSISTOR XP4213 (TR3000E)	
Q219	8-729-429-18	TRANSISTOR UN9213	
Q220	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q221	8-729-425-50	TRANSISTOR 2SB1462Q	
Q222	8-729-425-64	TRANSISTOR 2SD2216Q	
Q223	8-729-429-18	TRANSISTOR UN9213	
Q224	8-729-425-50	TRANSISTOR 2SB1462Q	
Q225	8-729-425-64	TRANSISTOR 2SD2216Q	
Q226	8-729-429-18	TRANSISTOR UN9213	
Q227	8-729-425-50	TRANSISTOR 2SB1462Q	
Q228	8-729-429-18	TRANSISTOR UN9213	
Q229	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q230	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q231	8-729-425-73	TRANSISTOR 2SC4627-C	
Q234	8-729-425-73	TRANSISTOR 2SC4627-C	
Q235	8-729-028-13	TRANSISTOR 2SA1885-TL	
Q236	8-729-425-64	TRANSISTOR 2SD2216Q	
Q237	8-729-425-64	TRANSISTOR 2SD2216Q	
Q238	8-729-425-64	TRANSISTOR 2SD2216Q	
Q240	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q241	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q242	8-729-425-50	TRANSISTOR 2SB1462Q	
Q243	8-729-425-73	TRANSISTOR 2SC4627-C	
Q244	8-729-425-73	TRANSISTOR 2SC4627-C	
Q245	8-729-427-72	TRANSISTOR XP4501	
Q246	8-729-425-64	TRANSISTOR 2SD2216Q	
Q247	8-729-425-73	TRANSISTOR 2SC4627-C	
Q248	8-729-428-88	TRANSISTOR UN9113	
Q250	8-729-425-64	TRANSISTOR 2SD2216Q	
Q251	8-729-428-88	TRANSISTOR UN9113	
Q252	8-729-425-50	TRANSISTOR 2SB1462Q	
Q253	8-729-429-18	TRANSISTOR UN9213	
Q254	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q255	8-729-427-46	TRANSISTOR XP4213 (TR3000E)	
Q256	8-729-028-13	TRANSISTOR 2SA1885-TL	
Q257	8-729-428-88	TRANSISTOR UN9113 (TR3000E)	
Q259	8-729-429-50	TRANSISTOR XP4312	
Q381	8-729-429-18	TRANSISTOR UN9213 (TR3000E)	
Q382	8-729-428-88	TRANSISTOR UN9113 (TR3000E)	
Q383	8-729-425-50	TRANSISTOR 2SB1462Q (TR3000E)	
Q410	8-729-425-64	TRANSISTOR 2SD2216Q	
Q412	8-729-425-64	TRANSISTOR 2SD2216Q	
Q413	8-729-101-07	TRANSISTOR 2SB798-DL	
Q414	8-729-927-99	TRANSISTOR 2SC4617R	
Q415	8-729-425-64	TRANSISTOR 2SD2216Q	
Q416	8-729-429-14	TRANSISTOR UN9211	
Q417	8-729-425-50	TRANSISTOR 2SB1462Q	
Q419	8-729-427-23	TRANSISTOR XP4116	
Q420	8-729-425-64	TRANSISTOR 2SD2216Q	
Q421	8-729-015-66	TRANSISTOR 2SC4919-TL	
Q422	8-729-015-66	TRANSISTOR 2SC4919-TL	
Q423	8-729-015-66	TRANSISTOR 2SC4919-TL	
Q424	8-729-429-50	TRANSISTOR XP4312	
Q425	8-729-429-50	TRANSISTOR XP4312	
Q426	8-729-427-23	TRANSISTOR XP4116	
Q427	8-729-429-18	TRANSISTOR UN9213	
Q502	8-729-427-70	TRANSISTOR XP4401	
Q503	8-729-425-64	TRANSISTOR 2SD2216Q	
Q504	8-729-425-64	TRANSISTOR 2SD2216Q	
Q507	8-729-427-72	TRANSISTOR XP4501	
Q704	8-729-427-51	TRANSISTOR XP4215	
Q705	8-729-429-02	TRANSISTOR UN9110-QRS	
Q801	8-729-429-25	TRANSISTOR UN9216-QRS	
Q802	8-729-429-25	TRANSISTOR UN9216-QRS	
Q803	8-729-429-25	TRANSISTOR UN9216-QRS	
Q804	8-729-429-25	TRANSISTOR UN9216-QRS	
Q805	8-729-429-25	TRANSISTOR UN9216-QRS	
Q806	8-729-429-25	TRANSISTOR UN9216-QRS	
Q807	8-729-428-88	TRANSISTOR UN9113	
Q808	8-729-429-22	TRANSISTOR UN9215-QRS	
Q809	8-729-429-22	TRANSISTOR UN9215-QRS	
Q810	8-729-429-22	TRANSISTOR UN9215-QRS	
Q811	8-729-429-22	TRANSISTOR UN9215-QRS	
Q812	8-729-428-93	TRANSISTOR UN9115-QRS	
Q814	8-729-427-46	TRANSISTOR XP4213	
Q815	8-729-429-50	TRANSISTOR XP4312	
Q816	8-729-429-50	TRANSISTOR XP4312	
Q821	8-729-429-18	TRANSISTOR UN9213	
Q951	8-729-823-84	TRANSISTOR FP102	
Q952	8-729-823-82	TRANSISTOR FP101	
Q953	8-729-823-82	TRANSISTOR FP101	
Q954	8-729-015-60	TRANSISTOR 2SJ316-TD	
Q955	8-729-106-60	TRANSISTOR 2SB1115A	
Q956	8-729-429-18	TRANSISTOR UN9213	
Q963	8-729-823-84	TRANSISTOR FP102	
Q964	8-729-823-82	TRANSISTOR FP101	
Q965	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q966	8-729-425-50	TRANSISTOR 2SB1462Q	
Q967	8-729-427-72	TRANSISTOR XP4501	
Q968	8-729-427-42	TRANSISTOR XP4211	
Q969	8-729-427-12	TRANSISTOR XP4111	
Q970	8-729-429-32	TRANSISTOR UN9210-QRS	
Q971	8-729-427-70	TRANSISTOR XP4401	
Q972	8-729-425-64	TRANSISTOR 2SD2216Q	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R001	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R002	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R003	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R004	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R005	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R006	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R007	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R008	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R009	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R010	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R012	1-218-987-11	METAL GLAZE 680K 5% 1/16W	
R013	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R014	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R016	1-218-990-11	CONDUCTOR, CHIP (1005)	
R019	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R024	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R027	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R028	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R029	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000)
R029	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	(TR3000E)
R031	1-218-978-11	METAL GLAZE 120K 5% 1/16W	
R033	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R037	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R038	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R039	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R041	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R042	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R043	1-218-929-11	METAL GLAZE 10 5% 1/16W	
R044	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R045	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000E)
R046	1-218-967-11	METAL GLAZE 15K 5% 1/16W	(TR3000E)
R046	1-218-968-11	METAL GLAZE 18K 5% 1/16W	(TR3000)
R047	1-218-936-11	METAL GLAZE 39 5% 1/16W	
R048	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R049	1-218-933-11	METAL GLAZE 22 5% 1/16W	
R050	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R051	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R052	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R053	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R054	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R055	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R056	1-218-929-11	METAL GLAZE 10 5% 1/16W	
R057	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R058	1-218-990-11	CONDUCTOR, CHIP (1005)	
R059	1-218-990-11	CONDUCTOR, CHIP (1005)	
R064	1-218-990-11	CONDUCTOR, CHIP (1005)	
R065	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R066	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R070	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000E)
R070	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R071	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R072	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R075	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R076	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R077	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R078	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R079	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R080	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R081	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R082	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R083	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	
R084	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R085	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R087	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R088	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R089	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R089	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000)
R090	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R091	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R092	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R093	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R095	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000E)
R095	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R096	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000E)
R096	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R097	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R098	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R099	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000)
R102	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R103	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R104	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000)
R104	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R105	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R105	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000)
R106	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R106	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000)
R107	1-218-946-11	METAL GLAZE 270 5% 1/16W	(TR3000)
R107	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R109	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R110	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R111	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R112	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R113	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R114	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R115	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R116	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R117	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	(TR3000)
R117	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000E)
R119	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
R123	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	
R124	1-218-946-11	METAL GLAZE 270 5% 1/16W	(TR3000)
R124	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000E)
R125	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000E)
R125	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	(TR3000)
R126	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000)
R126	1-218-969-11	METAL GLAZE 22K 5% 1/16W	(TR3000E)
R127	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	(TR3000)
R127	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	(TR3000E)
R128	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R129	1-218-967-11	METAL GLAZE 15K 5% 1/16W	(TR3000E)
R129	1-218-971-11	METAL GLAZE 33K 5% 1/16W	(TR3000)
R130	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R131	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R133	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R134	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R135	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R136	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R138	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R139	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R140	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R141	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R142	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R143	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R144	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R145	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000E)
R145	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000)
R146	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R147	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R148	1-218-990-11	CONDUCTOR, CHIP (1005)	
R150	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R151	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000)
R151	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R152	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000)
R152	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R154	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R155	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R156	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000E)
R156	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000)
R157	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R158	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000)
R158	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R159	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R160	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R160	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000)
R162	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R163	1-218-941-11	METAL GLAZE 100 5% 1/16W	(TR3000E)
R163	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R164	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R164	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000)

Ref. No.	Part No.	Description	Remark
R165	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R166	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R167	1-218-952-11	METAL GLAZE 820 5% 1/16W	(TR3000)
R167	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R168	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000)
R185	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R190	1-218-990-11	CONDUCTOR, CHIP (1005)	
R191	1-218-990-11	CONDUCTOR, CHIP (1005)	
R192	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R193	1-218-990-11	CONDUCTOR, CHIP (1005)	
R195	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R196	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R197	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R198	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R200	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R201	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R202	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R203	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R204	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R205	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R206	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R207	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R208	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R210	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R211	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R214	1-218-987-11	METAL GLAZE 680K 5% 1/16W	
R215	1-218-942-11	METAL GLAZE 120 5% 1/16W	(TR3000E)
R216	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000E)
R217	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R219	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R221	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R222	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R224	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R225	1-218-943-11	METAL GLAZE 150 5% 1/16W	
R226	1-218-990-11	CONDUCTOR, CHIP (1005)	
R228	1-218-990-11	CONDUCTOR, CHIP (1005)	
R229	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	(TR3000E)
R229	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	(TR3000)
R232	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R233	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R234	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R235	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R236	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R237	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R238	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R239	1-218-859-11	METAL CHIP 3.3K 0.50% 1/16W	
R240	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000E)
R240	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000)
R241	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R242	1-218-953-11	METAL GLAZE 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R243	1-218-839-11	METAL GLAZE 470 0.50% 1/16W	
R245	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R246	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R247	1-218-837-11	METAL GLAZE 390 0.50% 1/16W	
R248	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R249	1-218-990-11	CONDUCTOR, CHIP (1005)	
R251	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R252	1-218-990-11	CONDUCTOR, CHIP (1005)	
R253	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R254	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R255	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R256	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R257	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R258	1-218-969-11	METAL GLAZE 22K 5% 1/16W	(TR3000E)
R259	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R260	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R261	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R262	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R263	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R264	1-216-296-91	CONDUCTOR, CHIP (3216)	
R265	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R266	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R267	1-218-942-11	METAL GLAZE 120 5% 1/16W	(TR3000E)
R267	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000)
R268	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R269	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R270	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R271	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R272	1-216-296-91	CONDUCTOR, CHIP (3216)	
R273	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R274	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R275	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R276	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R278	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R279	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R280	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R281	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R282	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R283	1-218-990-11	CONDUCTOR, CHIP (1005)	
R284	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R285	1-216-296-91	CONDUCTOR, CHIP (3216)	
R286	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R287	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R288	1-218-942-11	METAL GLAZE 120 5% 1/16W	(TR3000E)
R288	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000)
R289	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R290	1-218-990-11	CONDUCTOR, CHIP (1005)	
R291	1-216-296-91	CONDUCTOR, CHIP (3216)	
R292	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R293	1-218-974-11	METAL GLAZE 56K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R294	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R295	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R296	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	
R297	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R298	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R299	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R300	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R301	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R302	1-218-990-11	CONDUCTOR, CHIP (1005)	
R303	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	(TR3000)
R303	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000E)
R304	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R306	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R307	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R308	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R308	1-218-952-11	METAL GLAZE 820 5% 1/16W	(TR3000)
R310	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R311	1-218-990-11	CONDUCTOR, CHIP (1005)	
R313	1-218-990-11	CONDUCTOR, CHIP (1005)	
R314	1-218-946-11	METAL GLAZE 270 5% 1/16W	(TR3000)
R314	1-218-948-11	METAL GLAZE 390 5% 1/16W	(TR3000E)
R315	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000)
R315	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R316	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R317	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R320	1-218-946-11	METAL GLAZE 270 5% 1/16W	(TR3000)
R320	1-218-947-11	METAL GLAZE 330 5% 1/16W	(TR3000E)
R321	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R323	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R326	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R327	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R328	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R329	1-218-942-11	METAL GLAZE 120 5% 1/16W	(TR3000E)
R329	1-218-943-11	METAL GLAZE 150 5% 1/16W	(TR3000)
R330	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R331	1-218-950-11	METAL GLAZE 560 5% 1/16W	
R332	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R333	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R337	1-218-954-11	METAL GLAZE 1.2K 5% 1/16W	
R338	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R339	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R340	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R341	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000E)
R341	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000)
R342	1-218-949-11	METAL GLAZE 470 5% 1/16W	(TR3000)
R342	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R343	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R344	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R345	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	
R346	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	

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Ref.No.	Part No.	Description	Remark
R347	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R348	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R349	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000E)
R350	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R351	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R352	1-218-952-11	METAL GLAZE 820 5% 1/16W	(TR3000)
R352	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000E)
R353	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R354	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R355	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R356	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R357	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R358	1-218-945-11	METAL GLAZE 220 5% 1/16W	(TR3000)
R358	1-218-946-11	METAL GLAZE 270 5% 1/16W	(TR3000E)
R359	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R360	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R361	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000E)
R362	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R362	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R364	1-218-941-11	METAL GLAZE 100 5% 1/16W	(TR3000)
R364	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000E)
R366	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R367	1-218-990-11	CONDUCTOR, CHIP (1005)	
R368	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R369	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R370	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R371	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R372	1-218-990-11	CONDUCTOR, CHIP (1005)	
R373	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R374	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R375	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000)
R376	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	(TR3000E)
R377	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000E)
R378	1-218-977-11	METAL GLAZE 100K 5% 1/16W	(TR3000E)
R379	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R380	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R383	1-218-977-11	METAL GLAZE 100K 5% 1/16W	(TR3000E)
R384	1-218-990-11	CONDUCTOR, CHIP (1005)	
R385	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R386	1-218-969-11	METAL GLAZE 22K 5% 1/16W	(TR3000E)
R387	1-218-977-11	METAL GLAZE 100K 5% 1/16W	(TR3000E)
R389	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000E)
R391	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000E)
R392	1-218-951-11	METAL GLAZE 680 5% 1/16W	(TR3000E)
R393	1-218-950-11	METAL GLAZE 560 5% 1/16W	(TR3000E)
R394	1-218-893-11	METAL CHIP 82K 0.50% 1/16W	(TR3000E)
R395	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	(TR3000E)
R396	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	(TR3000E)
R397	1-218-977-11	METAL GLAZE 100K 5% 1/16W	(TR3000E)
R420	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R422	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R423	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R424	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R425	1-218-990-11	CONDUCTOR, CHIP (1005)	
R427	1-218-990-11	CONDUCTOR, CHIP (1005)	
R428	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R429	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R430	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R431	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R432	1-216-803-11	METAL CHIP 33 5% 1/16W	
R433	1-216-803-11	METAL CHIP 33 5% 1/16W	
R434	1-216-804-11	METAL CHIP 39 5% 1/16W	
R435	1-216-804-11	METAL CHIP 39 5% 1/16W	
R436	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R437	1-218-941-11	METAL GLAZE 100 5% 1/16W	
R438	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R439	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R440	1-218-941-11	METAL GLAZE 100 5% 1/16W	
R441	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R442	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R443	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R444	1-218-845-11	METAL CHIP 820 0.50% 1/16W	(TR3000)
R444	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	(TR3000E)
R445	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R446	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R447	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R448	1-218-990-11	CONDUCTOR, CHIP (1005)	
R449	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R450	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R457	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R458	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R459	1-216-304-11	METAL CHIP 3.3 5% 1/10W	
R460	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R461	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R462	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R463	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R464	1-218-990-11	CONDUCTOR, CHIP (1005)	
R465	1-218-990-11	CONDUCTOR, CHIP (1005)	
R467	1-218-990-11	CONDUCTOR, CHIP (1005)	
R468	1-216-803-11	METAL CHIP 33 5% 1/16W	
R469	1-216-804-11	METAL CHIP 39 5% 1/16W	
R472	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R473	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R480	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R481	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R482	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R483	1-218-990-11	CONDUCTOR, CHIP (1005)	
R486	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R488	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R492	1-218-990-11	CONDUCTOR, CHIP (1005)	

Ref. No.	Part No.	Description	Remark
R494	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R495	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R496	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R497	1-218-990-11	CONDUCTOR, CHIP (1005)	
R498	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R499	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	(TR3000E)
R501	1-216-019-00	METAL CHIP 56 5% 1/10W	
R502	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R503	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R504	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R512	1-218-958-11	METAL GLAZE 2.7K 5% 1/16W	
R513	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R514	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R516	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R517	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R518	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R529	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R530	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R531	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R533	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R535	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R536	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R537	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R538	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R539	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R540	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R541	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R542	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R543	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R544	1-217-671-11	METAL CHIP 1 5% 1/10W	
R545	1-217-671-11	METAL CHIP 1 5% 1/10W	
R546	1-217-671-11	METAL CHIP 1 5% 1/10W	
R548	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R549	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R550	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R551	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R552	1-218-953-11	METAL GLAZE 1K 5% 1/16W	(TR3000)
R552	1-218-990-11	CONDUCTOR, CHIP (1005)	(TR3000E)
R553	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000)
R554	1-218-990-11	CONDUCTOR, CHIP (1005)	
R559	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R560	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R563	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R564	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	(TR3000)
R564	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000E)
R565	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R566	1-218-960-11	METAL GLAZE 3.9K 5% 1/16W	(TR3000)
R566	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	(TR3000E)
R567	1-218-985-11	METAL GLAZE 470K 5% 1/16W	(TR3000E)
R567	1-218-988-11	METAL GLAZE 820K 5% 1/16W	(TR3000)
R568	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R569	1-218-990-11	CONDUCTOR, CHIP (1005)	
R571	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R572	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R573	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R574	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R575	1-218-990-11	CONDUCTOR, CHIP (1005)	
R596	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R607	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R608	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R611	1-218-940-11	METAL GLAZE 82 5% 1/16W	
R616	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R617	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R618	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R619	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R620	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R623	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R629	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R630	1-218-990-11	CONDUCTOR, CHIP (1005)	
R640	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R641	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R643	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R644	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R656	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R657	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R658	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R659	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R660	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R661	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R662	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R664	1-218-990-11	CONDUCTOR, CHIP (1005)	
R672	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R673	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R675	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R677	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R681	1-218-990-11	CONDUCTOR, CHIP (1005)	
R683	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R701	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R702	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R703	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R710	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R712	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R716	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R718	1-218-990-11	CONDUCTOR, CHIP (1005)	
R719	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R722	1-218-990-11	CONDUCTOR, CHIP (1005)	
R723	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R725	1-218-951-11	METAL GLAZE 680 5% 1/16W	
R726	1-218-990-11	CONDUCTOR, CHIP (1005)	
R728	1-218-953-11	METAL GLAZE 1K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
R729	1-218-990-11	CONDUCTOR, CHIP (1005)	
R730	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R731	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R732	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R733	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R734	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R739	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R740	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R742	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R743	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R744	1-218-990-11	CONDUCTOR, CHIP (1005)	
R745	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R747	1-218-990-11	CONDUCTOR, CHIP (1005)	
R748	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R750	1-218-990-11	CONDUCTOR, CHIP (1005)	
R756	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R757	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R758	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R759	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R760	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R761	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R762	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R763	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R764	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R765	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R766	1-218-907-11	METAL CHIP 330K 0.50% 1/16W	
R767	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R768	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R769	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R770	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R771	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R772	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R782	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R783	1-218-990-11	CONDUCTOR, CHIP (1005)	
R784	1-218-990-11	CONDUCTOR, CHIP (1005)	
R785	1-218-990-11	CONDUCTOR, CHIP (1005)	
R786	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R787	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R788	1-218-990-11	CONDUCTOR, CHIP (1005)	
R789	1-218-990-11	CONDUCTOR, CHIP (1005)	
R790	1-218-990-11	CONDUCTOR, CHIP (1005)	
R791	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R792	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R793	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R794	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R796	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R799	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R803	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R807	1-218-990-11	CONDUCTOR, CHIP (1005)	
R810	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R811	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R812	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R813	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R817	1-218-990-11	CONDUCTOR, CHIP (1005)	
R819	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R820	1-218-944-11	METAL GLAZE 180 5% 1/16W	
R821	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R822	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R823	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R824	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R827	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R831	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R832	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R834	1-218-851-11	METAL CHIP 1.5K 0.50% 1/16W	
R835	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R836	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R837	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R838	1-218-851-11	METAL CHIP 1.5K 0.50% 1/16W	
R839	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R840	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R841	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R842	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R843	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R844	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R845	1-218-965-11	METAL GLAZE 10K 5% 1/16W	(TR3000)
R849	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R850	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R854	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R855	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R856	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R865	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R876	1-218-956-11	METAL GLAZE 1.8K 5% 1/16W	
R880	1-218-990-11	CONDUCTOR, CHIP (1005)	
R904	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R906	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R938	1-218-990-11	CONDUCTOR, CHIP (1005)	
R946	1-218-938-11	METAL GLAZE 56 5% 1/16W	
R951	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R952	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R953	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R954	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R955	1-218-990-11	CONDUCTOR, CHIP (1005)	
R956	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R957	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R958	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R959	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R960	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R961	1-218-943-11	METAL GLAZE 150 5% 1/16W	
R962	1-218-941-11	METAL GLAZE 100 5% 1/16W	
R963	1-218-941-11	METAL GLAZE 100 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R964	1-218-941-11	METAL GLAZE 100 5% 1/16W	
R965	1-218-945-11	METAL GLAZE 220 5% 1/16W	
R966	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R967	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R969	1-218-984-11	METAL GLAZE 390K 5% 1/16W	
R971	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R972	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R988	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R989	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R990	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R991	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R992	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R993	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R995	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R996	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R997	1-218-889-11	METAL CHIP 56K 0.50% 1/16W	
R998	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R999	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
		< COMPOSITION CIRCUIT BLOCK >	
RB501	1-239-286-11	NETWORK RESISTOR (CHIP) 22K	
RB502	1-236-907-11	NETWORK RESISTOR (CHIP) 100K	
RB503	1-236-907-11	NETWORK RESISTOR (CHIP) 100K	
RB504	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB505	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB506	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB701	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB702	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB703	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB704	1-236-904-11	NETWORK RESISTOR (CHIP) 1.0K	
RB705	1-236-907-11	NETWORK RESISTOR (CHIP) 100K	
RB706	1-239-711-11	NETWORK RESISTOR (CHIP) 0	
		< VARIABLE RESISTOR >	
RV201	1-238-852-11	RES, ADJ, CERMET 470	
		< TRANSFORMER >	
T951	1-427-676-21	TRANSFORMER, DC/DC CONVERTER	
		< VIBRATOR >	
X071	1-760-459-21	VIBRATOR, CRYSTAL (46.32MHz)(TR3000)	
X071	1-760-460-21	VIBRATOR, CRYSTAL (46.32MHz)(TR3000E)	
X201	1-579-365-21	VIBRATOR, CRYSTAL (3.58MHz)(TR3000)	
X201	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)(TR3000E)	
X501	1-760-314-11	VIBRATOR, CRYSTAL (11.89MHz)(TR3000)	
X501	1-760-315-11	VIBRATOR, CRYSTAL (11.718MHz)(TR3000E)	
X701	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)	
XTL701	1-579-369-21	VIBRATOR (10MHz)	

Ref. No.	Part No.	Description	Remark
*	A-7072-372-A	ZM-23P BOARD, COMPLETE (TR3000E) *********************************	
*	A-7072-409-A	ZM-23 BOARD, COMPLETE (TR3000) ******************************	
		< CONNECTOR >	
CN951	1-766-840-21	CONNECTOR, FFC/FPC (ZIF) 21P	
CN952	1-766-354-21	CONNECTOR, FFC/FPC 24P	
CN953	1-764-707-21	CONNECTOR, FFC/FPC (LIF) 8P	
		< DIODE >	
D951	8-719-989-79	LED AA1102W	
D951	8-719-951-20	LED BR1102W	
		< TRANSISTOR >	
Q951	8-729-425-50	TRANSISTOR 2SB1462Q	
Q952	8-729-822-05	TRANSISTOR 2SD1622-ST-TD	
		< RESISTOR >	
R951	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R952	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R954	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R955	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R956	1-216-840-11	METAL CHIP 39K 5% 1/16W	
		< VARIABLE RESISTOR >	
RV951	1-223-491-11	RES, VAR (ZOOM/SELF RETURN) 100K	
		MISCELLANEOUS *************	
66	1-473-243-11	SWITCH BLOCK, CONTROL (PF-4260)	
107	1-473-242-11	SWITCH BLOCK, CONTROL (CF-4260)	
158	1-657-201-11	FP-261 FLEXIBLE BOARD	
168	1-657-206-11	FP-264 FLEXIBLE BOARD	
201	1-473-241-21	SWITCH BLOCK, CONTROL (FK-4260)	(TR3000E:AEP, UK)
201	1-473-241-31	SWITCH BLOCK, CONTROL (FK-4260)	(TR3000/TR3000E:E, AUS, HK)
209	1-657-200-11	FP-260 FLEXIBLE BOARD	
211	1-657-205-11	FP-263 FLEXIBLE BOARD	
217	1-537-578-11	TERMINAL BOARD, BATTERY	
220	1-657-202-11	FP-262 FLEXIBLE BOARD	
223	1-657-196-11	FP-256 FLEXIBLE BOARD	
253	1-657-198-11	FP-258 FLEXIBLE BOARD	
254	1-657-199-11	FP-259 FLEXIBLE BOARD	
260	1-547-767-41	FILTER BLOCK, OPTICAL	
770	1-649-039-11	FP-690 FLEXIBLE BOARD	

Ref. No.	Part No.	Description	Remark
802	1-649-912-11	FP-94 FLEXIBLE BOARD	
830	A-7049-495-A	DRUM ASSY, UPPER (DGR-89-R-(1))(TR3000) (COLOR MARK:GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-498-A	DRUM ASSY, UPPER (DGR-89-R-(2))(TR3000) (COLOR MARK:RED, RED/RED, BLUE, BLUE/RED)	
830	A-7049-461-A	DRUM ASSY, UPPER (DGR-80-R-(1))(TR3000E) (COLOR MARK:GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-464-A	DRUM ASSY, UPPER (DGR-80-R-(2))(TR3000E) (COLOR MARK:RED, RED/RED, BLUE, BLUE/RED)	
874	1-649-038-11	FP-685 FLEXIBLE BOARD	
BL801	1-519-746-91	TUBE, FLUORESCENT (0.7 INCH)	
BZ1	1-529-096-11	BUZZER, PIEZOELECTRIC	
IC201	A-7030-615-A	CCD BLOCK ASSY (ICX-079AK-1)(CCD IMAGER) (TR3000E)	
IC201	A-7030-634-A	CCD BLOCK ASSY (ICX-078AK-1)(CCD IMAGER) (TR3000)	
J991	1-537-577-11	TERMINAL BOARD	
LCD801	8-753-016-00	LCX009AK-4 (TR3000/TR3000E:E, AUS, HK)	
LCD801	8-753-016-04	LCX009AK-1 (TR3000E:AEP, UK)	
M901	A-7048-714-A	DRUM ASSY (DGH-89F-R)(TR3000)	
M901	A-7048-716-A	DRUM ASSY (DGH-80E-R)(TR3000E)	
M902	8-835-498-12	MOTOR, DC SCE-0401A	
M903	X-3943-127-1	MOTOR ASSY, L	
MIC1	1-542-215-51	MICROPHONE, CONDENSER	
MIC2	1-542-215-51	MICROPHONE, CONDENSER	
MIC3	1-542-215-51	MICROPHONE, CONDENSER	
W104	1-653-838-11	FP-185 FLEXIBLE BOARD	
M905	3-709-036-01	MOTOR, FOCUS	
M906	3-709-037-01	MOTOR, ZOOM	
S001	1-572-288-31	SWITCH, PUSH (C.C. LOCK)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, ME/MP)	
SE401	1-810-889-31	SENSOR, ANGULAR VELOCITY (PITCH)	
SE402	1-810-889-41	SENSOR, ANGULAR VELOCITY (YAW)	
W201	1-657-197-11	FP-257 FLEXIBLE BOARD	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-569-008-11	ADAPTER, CONVERSION 2P (TR3000E:HK)	
	1-573-291-11	CONNECTOR, CONVERSION (TR3000E:AEP, UK)	
	1-751-498-11	CORD, CONNECTION (S VIDEO CONNECTING CABLE (STEREO), 1.5M)	
	1-769-166-11	CORD, CONNECTION (TR3000E) (AC POWER ADAPTOR CONNECTING CABLE, 2.1M)	
	1-769-285-11	CORD, CONNECTION (A/V CONNECTING CABLE (STEREO), 1.5M)	
	3-800-030-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(TR3000E:AEP, UK)	
	3-800-030-21	MANUAL, INSTRUCTION (ENGLISH)(TR3000:US, CND)	
	3-800-030-31	MANUAL, INSTRUCTION (FRENCH)(TR3000:CND)	
	3-800-030-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN)(TR3000E:AEP)	
	3-800-030-51	MANUAL, INSTRUCTION (FRENCH, DUTCH)(TR3000E:AEP)	
	3-800-030-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE)(TR3000E:AEP)	
	3-800-639-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(TR3000:E, HK)	
	3-800-639-41	MANUAL, INSTRUCTION (CHINESE)(TR3000:E, HK)	
	3-800-639-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(TR3000E:E, AUS, HK)	
	3-800-639-61	MANUAL, INSTRUCTION (FRENCH, GERMAN)(TR3000E:E, HK)	
	3-800-639-71	MANUAL, INSTRUCTION (ARABIC)(TR3000E:E)	
	3-800-639-81	MANUAL, INSTRUCTION (CHINESE)(TR3000E:E, HK)	
	3-947-969-21	BELT (S), SHOULDER (TR3000E:UK, E, AUS, HK)	
	3-965-472-11	WRENCH, FILTER	
	3-965-473-11	COVER (H), EVF	
*	3-965-974-01	INDIVIDUAL CARTON (TR3000E:AEP, UK)	
*	3-965-974-11	INDIVIDUAL CARTON (TR3000:US, CND)	
*	3-965-974-21	INDIVIDUAL CARTON (TR3000:E, HK)	
*	3-965-974-31	INDIVIDUAL CARTON (TR3000E:E, AUS, HK)	
*	3-965-976-01	CUSHION (LOWER)	
*	3-965-975-01	CUSHION, ACC	
	8-917-267-90	REMOTE CONTROL RMT-712 SET (TR3000/TR3000E:E, AUS, HK)	
	8-917-270-90	REMOTE CONTROL RMT-711 SET (TR3000E:AEP, UK)	
	A-6776-329-A	AC POWER ADAPTOR (AC-V515)(E)	
	A-6776-330-A	AC POWER ADAPTOR (AC-V515)(US, Canadian)	
	A-6776-332-A	AC POWER ADAPTOR (AC-V515)(Australian)	
	A-6776-333-A	AC POWER ADAPTOR (AC-V515)(AEP)	
	A-6776-334-A	AC POWER ADAPTOR (AC-V515)(UK)	
	A-7009-030-A	AC POWER ADAPTOR (AC-V515)(Hong Kong)	
**	NP-520	BATTERY PACK	

NOTE.

** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

SECTION 6
ADJUSTMENTS

6-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–32.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Multi CPC jig	J-6082-311-A	For adjusting the video section For adjusting the viewfinder
J-8	Measuring pin tool for the color viewfinder	J-6082-192-A	For the color viewfinder adjustment[Note 2]
J-9	Power code	J-6082-233-A	For connecting the battery terminal and DC power supply
J-10	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-11	Extension cable (6P, 1.5 mm)	J-6082-152-A	For extension between the FU-125 board (CN002) and EZ-16 board (CN101)
J-12	EZ clip jig	J-6082-244-A	For extension between the EZ-16 board (CN103) and the handycam station

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The multi CPC jig (J-7: J-6082-311-A) can be used instead of these tools.

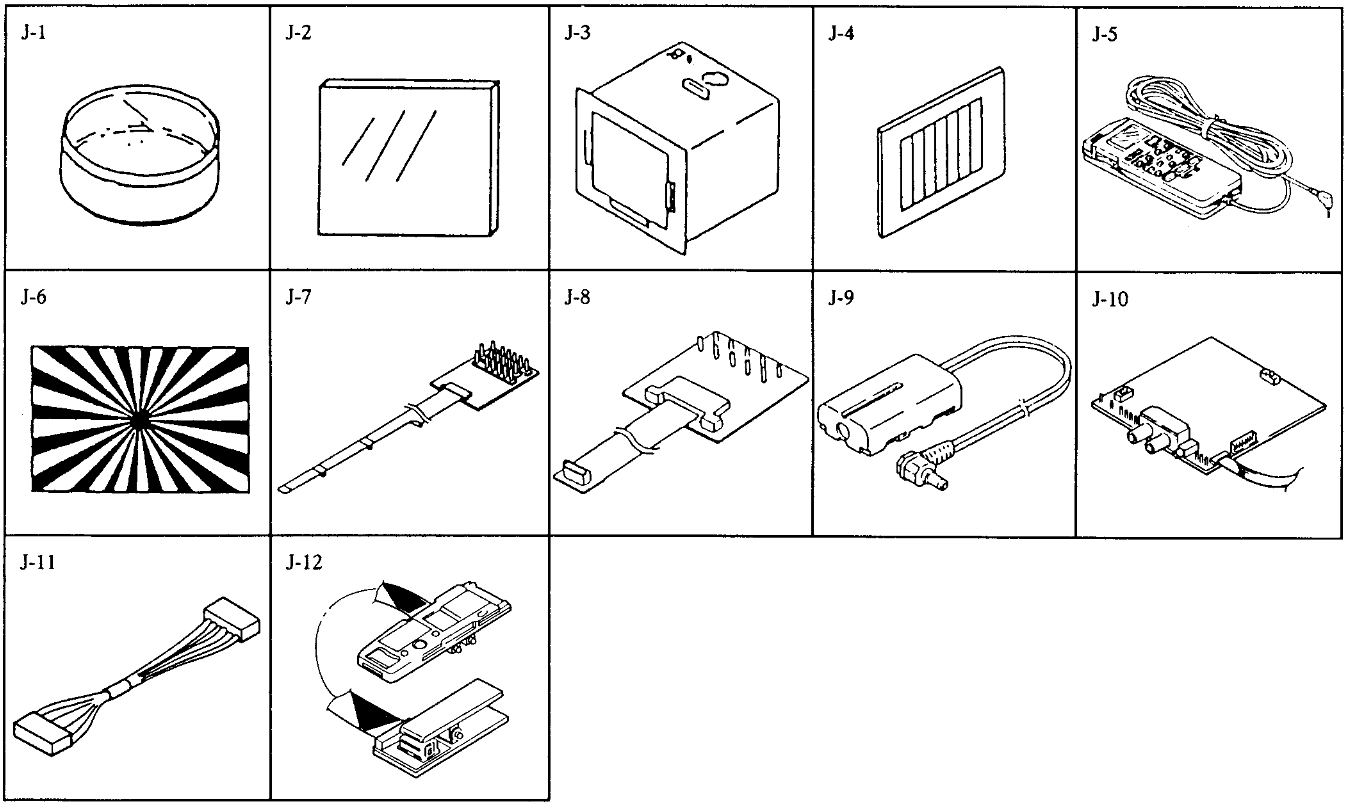

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12

Fig. 6-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC-162 board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 6-1-3.
2) The front panel block (Microphone amplifier, power switch and focus ring) need not be connected if the forced camera power supply ON mode (Note 1) is set. The focus can be controlled using the adjusting remote commander by turning off its HOLD switch.
   If remove the front panel block, disconnect the following connectors.
   1. 8P connector of PF-4260 block
   2. CN504 of MA-235 board (16P, 0.8 mm)

   Be sure to exit this mode after completing the adjustment. (Note 2)
3) The cabinet (R) (Camera function key, viewfinder and LCD) is requied in the camera section adjustments to turn off the digital zoom function.

Note 1: Setting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the front panel block has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

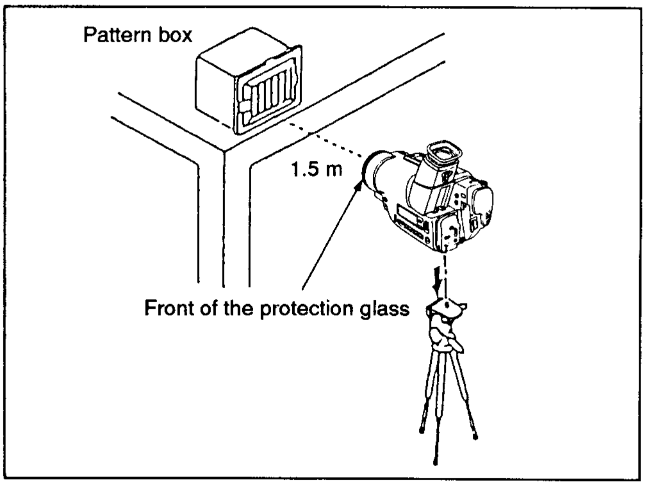


Fig. 6-1-2.

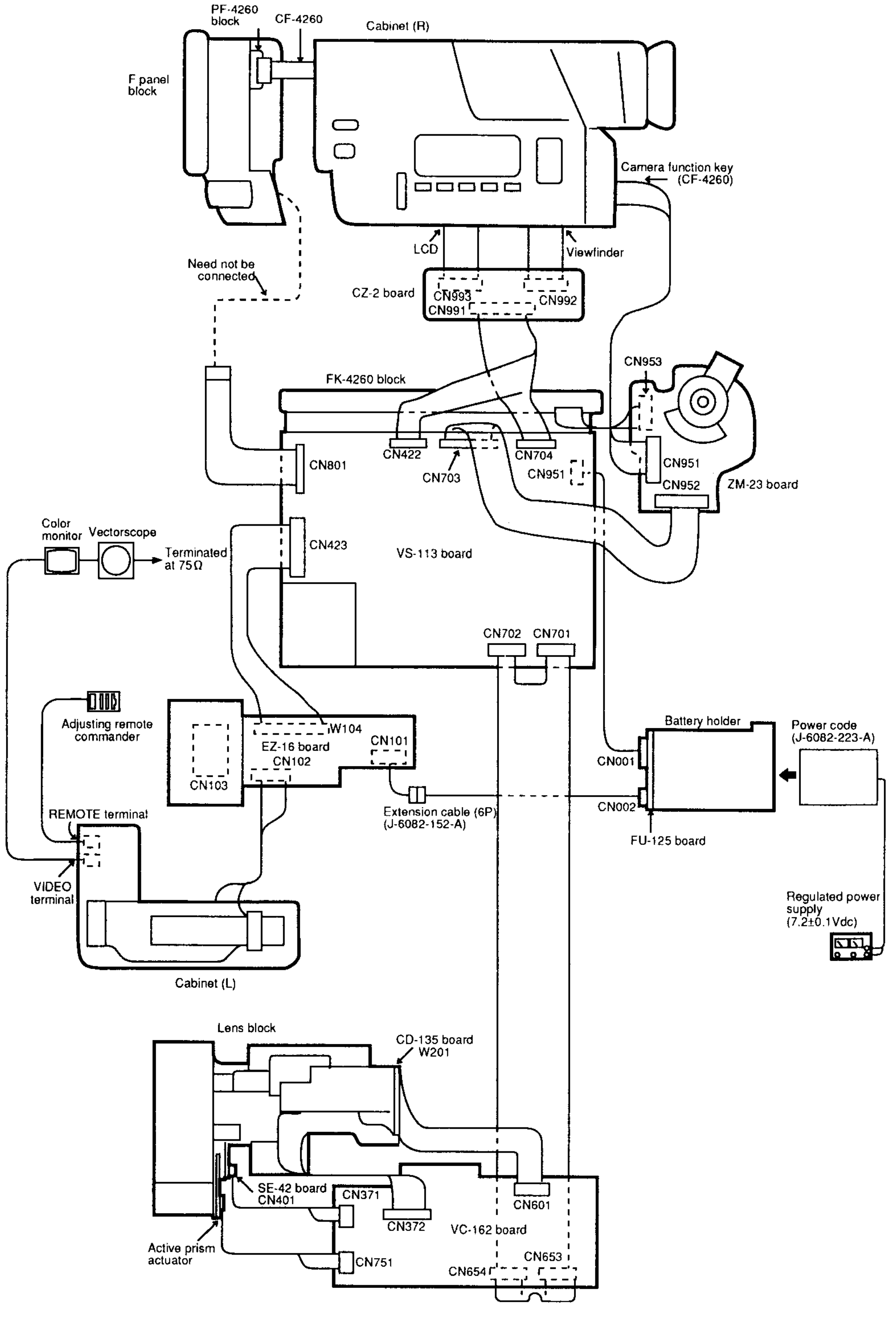

PF-4260 block
CF-4260
Cabinet (R)
F panel block
Camera function key (CF-4260)
LCD
Viewfinder
Need not be connected
CZ-2 board
CN993
CN992
CN991
CN953
FK-4260 block
CN422
CN703
CN704
CN951
CN952
ZM-23 board
CN801
Color monitor
Vectorscope
Terminated at 75Ω
CN423
VS-113 board
CN702
CN701
Adjusting remote commander
W104
EZ-16 board
CN101
CN102
CN103
Battery holder
Power code (J-6082-223-A)
CN001
CN002
REMOTE terminal
Extension cable (6P) (J-6082-152-A)
FU-125 board
VIDEO terminal
Regulated power supply (7.2±0.1Vdc)
Cabinet (L)
Lens block
CD-135 board
W201
SE-42 board
CN401
CN371
CN601
CN372
VC-162 board
Active prism actuator
CN751
CN653
CN654

Fig. 6-1-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player power switch (PF-4260)················Camera
2. Digital zoom switch (Menu display)·························Off
3. Steady shot switch (S009 on CF-4260 block)··············Off
4. Focus switch (S007 on CF-4260 block)················Manual
5. Auto lock switch (S006 on CF-4260 block)········Auto lock
6. 16:9 WIDE button (S023 on CF-4260 block)···············Off
7. Picture effect button (S007 on CF-4260 block)············Off
8. Still/flash motion button (S008 on CF-4260 block)
   (PAL model only)··Off

2. Adjusting Procedure

Adjust in the given order.

Color bar chart standard picture frame

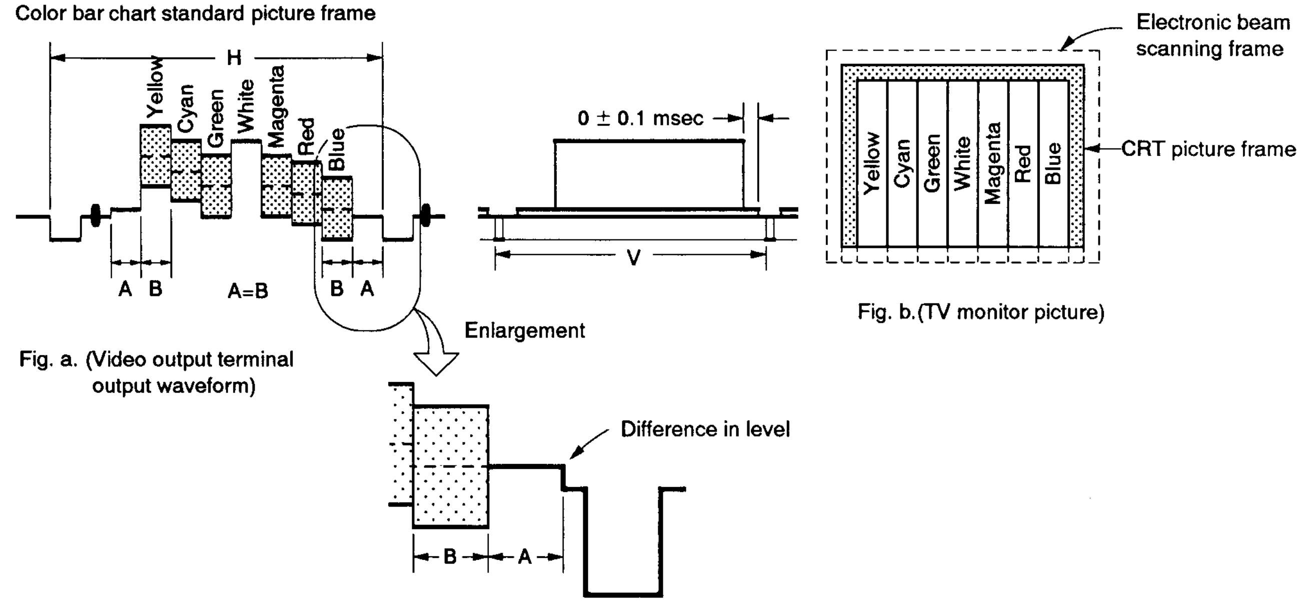

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 6-1-4.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 6-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (Don't touch the zoom switch)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 6-1-5.

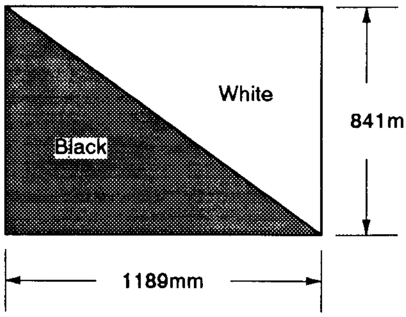

White
Black
841mm
1189mm

Fig. 6-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 6-1-6.

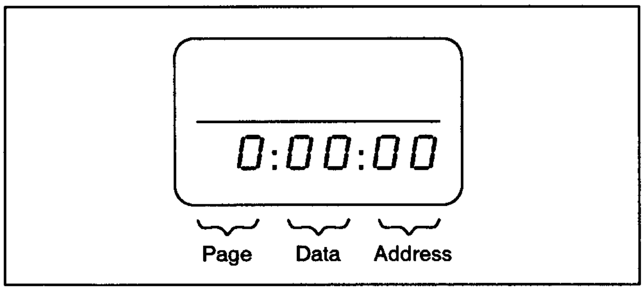


Fig. 6-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 6-1-1.

   - Changing the address
     The address increases when the FF (▸▸) button is pressed, and decreases when the REW (◂◂) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and set the data to 01, and enables Addresses 01 to BF of page F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 6, address: 00 and turn off the main power supply (7.2V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List for NTSC model

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing “Page F Data Initialization” and “Page F Data Modification”. They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: [ ]: When page 6, address 10 data is 10.
( ): When page 6, address 10 data is above 10.

Note 5: 〈 〉 : US, CND model.
(( )) : Other models.

Address	Adjustment data	
	Initial value	Memo column
00	7A	7A
01	(00) [08]	(00) [08]
02	00	00
03	53	53
04	80	80
05	80	80
06	80	
07	80	
08	32	
09	34	
0A	FB	
0B	F3	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	3A	
14	42	
15	50	
16	0B	
17	E6	
18	22	
19	2B	
1A	11	
1B	62	
1C	00	00
1D	00	00
1E	1E	
1F	14	
20	00	00
21	00	00

Table 6-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
22	00	00
23	00	00
24	80	
25	80	
26	20	
27	20	20
28	20	20
29	00	00
2A	6F	
2B	00	00
2C	7C	7C
2D	66	66
2E	75	75
2F	23	23
30	3E	3E
31	33	33
32	0B	0B
33	B0	B0
34	40	40
35	EF	FF
36	62	62
37	16	16
38	2A	2A
39	00	00
3A	00	00
3B	4C	4C
3C	55	55
3D	00	00
3E	35	35
3F	30	30
40	02	02
41	00	00
42	CF	CF
43	55	55
44	0F	0F
45	4C	4C
46	64	64
47	C0	C0
48	00	00
49	40	40
4A	00	00
4B	40	40
4C	74	74
4D	20	20

Table 6-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
4E	40	40
4F	20	20
50	12	12
51	02	02
52	66	66
53	18	18
54	6B	6B
55	A1	A1
56	66	66
57	6C	6C
58	5E	5E
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	20	20
5F	5C	5C
60	3C	3C
61	33	33
62	0C	0C
63	26	26
64	24	24
65	B2	B2
66	00	00
67	05	05
68	00	00
69	00	00
6A	04	04
6B	00	00
6C	04	04
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	84	84
73	40	40
74	00	00
75	1C	1C
76	1B	1B
77	E8	E8
78	A0	A0
79	30	30

Table 6-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7A	10	10
7B	50	50
7C	58	58
7D	88	88
7E	89	89
7F	6F	6F
80	04	04
81	04	04
82	23	23
83	60	60
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	2D	2D
8A	4C	4C
8B	5B	5B
8C	79	79
8D	DB	DB
8E	18	18
8F	80	80
90	00	00
91	6C	6C
92	00	00
93	FB	FB
94	03	03
95	28	28
96	4E	4E
97	69	69
98	76	76
99	30	30
9A	30	30
9B	23	23
9C	B0	B0
9D	72	72
9E	00	00
9F	FE	FE
A0	DC	DC
A1	7D	7D
A2	0C	0C
A3	00	00
A4	00	00
A5	00	00

Table 6-1-2 (4).

Address	Adjustment data	
	Initial value	Memo column
A6	00	00
A7	00	00
A8	00	00
A9	30	30
AA	40	40
AB	08	08
AC	28	28
AD	40	40
AE	FF	FF
AF	03	03
B0	6A	6A
B1	25	25
B2	14	14
B3	14	14
B4	0A	0A
B5	05	05
B6	08	08
B7	08	08
B8	80	80
B9	80	80
BA	⟨00⟩ ((03))	⟨00⟩ ((03))
BB	7F	7F
BC	00	00
BD	00	00
BE	00	00
BF	00	00
C0 to FF		

Table 6-1-2 (5).

1-1-6. Page F Address List for PAL model

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: [ ] : AEP, UK model
( ) : E, AUS, HK model

Address	Adjustment data	
	Initial value	Memo column
00	7B	7B
01	21	21
02	00	00
03	53	53
04	80	80
05	80	80
06	80	
07	80	
08	2D	
09	34	
0A	F5	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	3A	
14	42	
15	50	
16	0B	
17	E6	
18	22	
19	2B	
1A	11	
1B	62	
1C	00	00
1D	00	00
1E	1E	
1F	14	
20	00	00
21	00	00

Table 6-1-3 (1).

Address	Adjustment data	
	Initial value	Memo column
22	00	00
23	00	00
24	80	
25	80	
26	20	
27	20	20
28	20	20
29	00	00
2A	6F	
2B	00	00
2C	80	80
2D	70	70
2E	75	75
2F	23	23
30	3E	3E
31	33	33
32	0E	0E
33	B0	B0
34	40	40
35	FF	FF
36	42	42
37	16	16
38	23	23
39	00	00
3A	00	00
3B	4F	4F
3C	55	55
3D	02	02
3E	35	35
3F	30	30
40	02	02
41	00	00
42	CF	CF
43	55	55
44	0F	0F
45	4C	4C
46	64	64
47	C0	C0
48	00	00
49	40	40
4A	00	00
4B	40	40
4C	74	74
4D	20	20

Table 6-1-3 (2).

Address	Adjustment data	
	Initial value	Memo column
4E	40	40
4F	20	20
50	23	23
51	02	02
52	66	66
53	18	18
54	6B	6B
55	A1	A1
56	66	66
57	6C	6C
58	5E	5E
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	20	20
5F	5C	5C
60	3C	3C
61	33	33
62	0C	0C
63	26	26
64	24	24
65	B2	B2
66	00	00
67	05	05
68	00	00
69	00	00
6A	04	04
6B	00	00
6C	04	04
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	84	84
73	40	40
74	02	00
75	1C	1C
76	1B	1B
77	D8	D8
78	A0	A0
79	28	28

Table 6-1-3 (3).

Address	Adjustment data	
	Initial value	Memo column
7A	0D	0D
7B	50	50
7C	58	58
7D	88	88
7E	89	89
7F	6F	6F
80	04	04
81	04	04
82	27	27
83	6C	6C
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	2D	2D
8A	4C	4C
8B	5B	5B
8C	79	79
8D	DB	DB
8E	18	18
8F	80	80
90	00	00
91	6C	6C
92	00	00
93	FB	FB
94	03	03
95	28	28
96	4E	4E
97	69	69
98	76	76
99	30	30
9A	30	30
9B	23	23
9C	B0	B0
9D	72	72
9E	00	00
9F	FE	FE
A0	DC	DC
A1	7D	7D
A2	0C	0C
A3	00	00
A4	00	00
A5	00	00

Table 6-1-3 (4).

Address	Adjustment data	
	Initial value	Memo column
A6	00	00
A7	00	00
A8	00	00
A9	30	30
AA	40	40
AB	08	08
AC	28	28
AD	40	40
AE	FF	FF
AF	03	03
B0	6A	6A
B1	25	25
B2	14	14
B3	14	14
B4	0A	0A
B5	05	05
B6	08	08
B7	08	08
B8	80	80
B9	80	80
BA	[00] (03)	[00] (03)
BB	7F	7F
BC	00	00
BD	00	00
BE	00	00
BF	00	00
C0 to FF		

Table 6-1-3 (5).

1-1-7. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 6-1-4. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 6-1-4.

1-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (VS-113 board)

Subject	Option
Measuring instrument	Digital voltmeter
REG 4.9V check	
Measurement point	C970 ⊕ (CL959)
Specified value	4.9 ± 0.1 Vdc
REG 3.5V check	
Measurement point	C971 ⊕ (CL958)
Specified value	3.55 ± 0.1 Vdc
REG 15V check	
Measurement point	C974 ⊕ (CL961)
Specified value	15.07 ± 0.28 Vdc
AU –7.5V check	
Measurement point	Pin ⑦ of IC801 (CL963)
Specified value	–7.5 ± 0.5 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Set data: 01 to page: 6, address: 00.
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: (2D) [2F] to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   ( ): NTSC model
   [ ]: PAL model
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).
7) Set data: 00 to page: 6, address: 00.

3. Page F Data Modification

If the data of page F has been initialized, change the data by manual input.

Note 1: When changing the data of page F, set the data of page: 6, address: 00 to 01.

Note 2: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

Note 3: After completing "Page F data modification" set the data of page: 6, address: 00 to 00.

• For NTSC model

Address	Data
01	(00) [08]
1C	00
2E	75
2F	23
30	3E
31	33
34	40
36	62
37	16
38	2A
3B	4C
42	CF
43	55
44	0F
45	4C
46	64
47	C0
4C	74
50	12
9F	FE
A0	DC
A1	7D
A2	0C
AB	08
AC	28
AD	40
B2	14
B3	14
BA	((00)) [[03]]

• For PAL model

Address	Data
1C	00
2D	70
2E	75
2F	23
30	3E
31	33
34	40
36	42
37	16
38	23
42	CF
43	55
44	0F
45	4C
46	64
47	C0
4C	74
50	23
9F	FE
A0	DC
A1	7D
A2	0C
AB	08
AC	28
AD	40
B2	14
B3	14
BA	〈00〉 《03》

[ ]: When page 6, address 10 data is 10.
( ): When page 6, address 10 data is above 10.
〈 〉 : AEP, UK model
《 》 : E, AUS, HK model
(( )) : US, CND model
[[ ]] : Other NTSC models

4. 28 MHz Original Oscillation Adjustment (VC-162 board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

Subject	Not required
Measurement Point	Pin ⑫ of IC602 (JL604)
Measuring Instrument	Frequency counter
Adjusting Element	CT601
Specified Value	14318181 ± 71 Hz (NTSC) 14187500 ± 70 Hz (PAL)

Adjusting method:

1) Use CT601 to adjust the oscillation frequency to the specified value.

5. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	06, 07
Specified Value	1D to 21 during IRIS OPEN 8C to 90 during IRIS CLOSE

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and this data is named W_1.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and this data is named K_1.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and this data is named K_2.
15) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 6-1-4. "Hexadecimai notation-decimal notation conversion table".)
16) Calculate X_1' using the following equations (decimal notation calculation).

    $A'=W_2'+K_1'-W_1'-K_2'$ ……………………… Equation 1

    $B'=W_1'-K_1'$ ……………………………………… Equation 2

    $X_1'=\dfrac{1776+(48\times A')-(16\times B')}{A'}$ ……………… Equation 3
17) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
18) Set data: X_1 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "1F".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and this data is named W_0. If W_0 lies within the "8C" to "90" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert W_0 to hexadecimal notation, and obtain W_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

    $C'=W_0'-B'-31$ ……………………………… Equation 4

    $X_2'=\dfrac{(111-B')\times(X_1'-48)+48\times C'}{C'}$ ………… Equation 5

    (X_1' and B' are values obtained from equations 2 and3)
25) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
26) Set data X_2 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "8E".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "1D" to "21" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Set data: 00 to page: 6, address: 00.
5) Set data: 00 to page: 1, address: 00.

6. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

Subject	Chart for flange back adjustment (1990 ± 5 mm from the front side of the lens protection glass Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	16, 17, 18, 19, 1A, 1B, 1E, 1F, 26

Switch setting:
1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Adjusting method:
1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 01 to page: 6, address: 32.
4) Set data: 01 to page: 6, address: 33.
5) Check that the data of page: 6, address: 21 is 00.
6) Check that the page: F, address: 16 to 1B, 1E and 1F data is at the initial value. (Refer to Table 6-1-2. "Page F address list for NTSC model" or Table 6-1-3. "Page F address list for PAL model")
7) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
8) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B, 1E, 1F.)
9) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)
10) Set data: 1B to page: 6, address: 02.
11) Read the data of page: A, and this data is named D_{26}.
    A : —— : XX
    └→ D_{26}
12) Set data: D_{26} to page: F, address: 26, and press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 00.
2) Turn off the main power supply (7.2V).

7. Flange Back Check

Subject	Siemens star (1.99m from the front of the protection glass Luminance: approx. 200 lux)
Measurement Point	Check the operation on the TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Switch setting:
1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Checking method:
1) Place the Siemens star 1.99m from the front of the protection glass.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Set data: 01 to page: 6, address: 32.
4) Set data: 01 to page: 6, address: 33.
5) Shoot the siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note 1), and turn off the auto focus
8) Shoot the siemens star with the zoom WIDE end.
9) Check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.
1) Set data: 0C to page: 6, address: 02.
2) Page A shows the state of the focus.
   A : 00 : XX
   └→ (Odd: Focused
   Even: Unfocused)

Processing after compleating adjustments
1) Set data: 00 to page: 6, address: 02.
2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.
4) Set data: 00 to page: 6, address: 00.

8. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Switch setting:

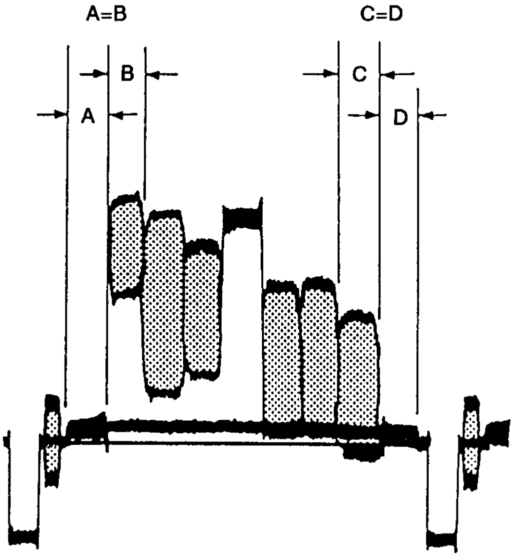
1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Setting method:

1) Set data: 01 to page: 6, address: 32.
2) Set data: 01 to page: 6, address: 33.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

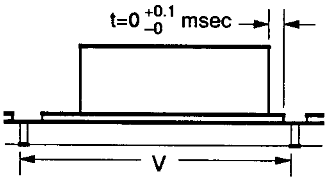


Fig. 6-1-7.

Check on the TV monitor

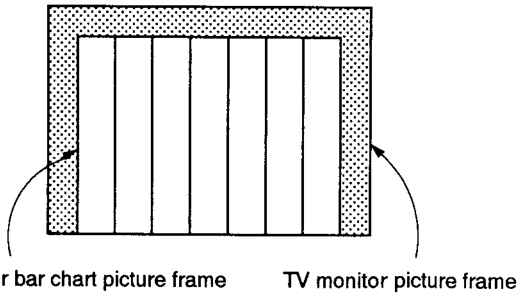


Fig. 6-1-8.

9. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	08, 09, 0A, 0B
Specified Value	All color luminance points should settle within each color reproduction frame (frame of bold lines).

Switch setting:

1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 6, address: 32.
3) Set data: 01 to page: 6, address: 33.
4) Set data: 00 to page: 6, address: 03.
5) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: F6 to page: F, address: 63, and press the PAUSE button of the adjusting remote commander.
7) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
8) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame (frame of bold lines).

   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.
   If not, the new data will not be written to the memory.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 26 to page: F, address: 63 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 32.
4) Set data: 00 to page: 6, address: 33.
5) Set data: 10 to page: 6, address: 03.
6) Set data: 00 to page: 6, address: 00.

For NTSC model

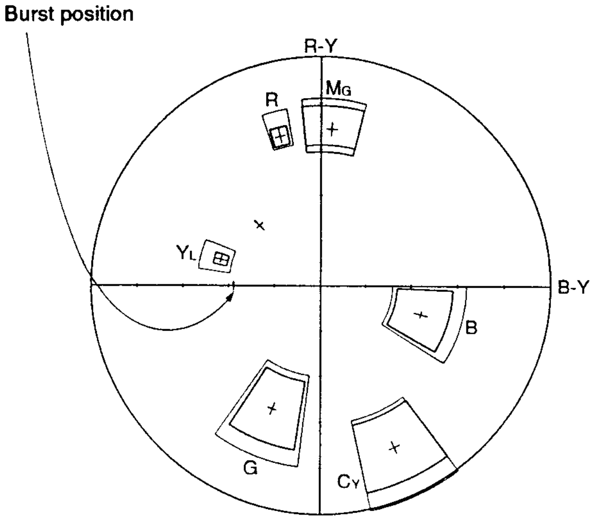


Fig. 6-1-9.

For PAL model

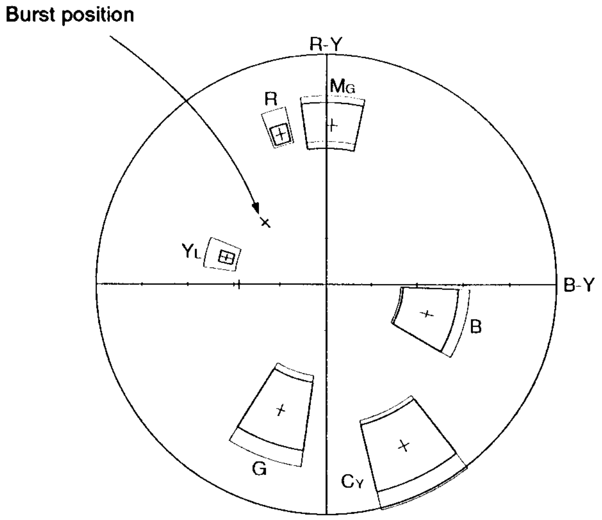


Fig. 6-1-10.

10. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	White pattern
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	13, 14

Switch setting:

1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)················· OFF

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6, address: 32.
5) Set data: 01 to page: 6, address: 33.
6) Set data: 0E to page: 6, address: 02.
7) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
9) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 6-1-4. "Hexadecimal Notation-Decimal Notation Conversion Table".)
10) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)
    When $D_2 \geqq$ D0
    $D_3'=D_1'-21$ ································Equation 1
    When $D_2 <$ D0
    $D_3'=D_1'-22$ ································Equation 2
11) Convert D_3' to a hexadecimal number and obtain D_3.
12) Set D_3 to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
13) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
14) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
15) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 6-1-4. "Hexadecimal Notation-Decimal Notation Conversion Table".)
16) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)
    When $D_5 \geqq$ F0
    $D_6'=D_4'-13$ ·····································Equation 3
    When $D_5 <$ F0
    $D_6'=D_4'-14$ ·····································Equation 4
17) Convert D_6' to a hexadecimal number and obtain D_6.
18) Set D_6 to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.
5) Set data: 00 to page: 6, address: 32.
6) Set data: 00 to page: 6, address: 33.
7) Set data: 00 to page: 6, address: 00.

11. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	White pattern standard picture frame
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	15, 2A
Specified Value	9C to A4

Switch setting:

1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 01 to page: 6, address: 00.
4) Set data: 01 to page: 6, address: 32.
5) Set data: 01 to page: 6, address: 33.
6) Set data: 01 to page: 2, address: 00.
7) Set data: 01 to page: 2, address: 42.
8) Set data: 5F to page: 2, address: 40.
9) Set data: 54 to page: 2, address: 41.
10) Set data: 01 to page: 6, address: 02.
11) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Change the data of page: F, address: 15 and adjust so that the DDS display data (Note 1) lies within the specified value.
13) Press the PAUSE button of the adjusting remote commander.
14) Read the data of page: F, address: 15, and this data is named as X.
15) Convert X to decimal notation and obtain X′. (Refer to Table 6-1-4. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate D2A′ using the following equations (decimal notation calculation).
    $A' = X' \div 2$ ··Equation 1
    (Round off to one decimal place)
    $D_{2A}' = 147 - A'$ ····························Equation 2 (NTSC)
    $D_{2A}' = 139 - A'$ ································Equation 2 (PAL)
17) Convert D2A′ to hexadecimal notation, and obtain D2A.
18) Set data: D2A to page: F, address: 2A, and press the PAUSE button of the adjusting remote commander.

Note 1: The right two digits of the display data at the right bottom side of the EVF and monitor TV is the object data. If the data change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the avarage value.

Processing after completing adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.
5) Set data: 00 to page: 6, address: 32.
6) Set data: 00 to page: 6, address: 33.
7) Set data: 00 to page: 6, address: 00.
8) Set data: 01 to page: 2, address: 00.
9) Set data: 00 to page: 2, address: 40.
10) Set data: 00 to page: 2, address: 41.
11) Set data: 00 to page: 2, address: 42.
12) Set data: 00 to page: 2, address: 00.

12. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Switch setting:
1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Adjusting method:
1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 11 is 00.
4) Set data: 01 to page: 6, address: 32.
5) Set data: 01 to page: 6, address: 33.
6) Wait for 2 seconds.
7) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
8) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
9) Check that the data of page: 6, address: 11 is 01.
10) Perform "Auto White Balance Adjustment".

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.
4) Set data: 00 to page: 6, address: 00.

13. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2C40 to 2CC0 B ratio: 5F40 to 5FC0

Switch setting:
1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Adjusting method:
1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6, address: 00.
5) Set data: 01 to page: 6, address: 32.
6) Set data: 01 to page: 6, address: 33.
7) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
8) Set data: 04 to page: 6, address: 02.
9) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.
11) Set data: 05 to page: 6, address: 02.
12) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
13) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set data: E0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Set data: 00 to page: 6, address: 32.
5) Set data: 00 to page: 6, address: 33.
6) Set data: 00 to page: 6, address: 00.
7) Set data: 00 to page: 1, address: 00.

14. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 6-1-11. A to C

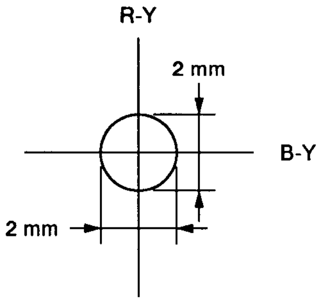


Fig. 6-1-11. A

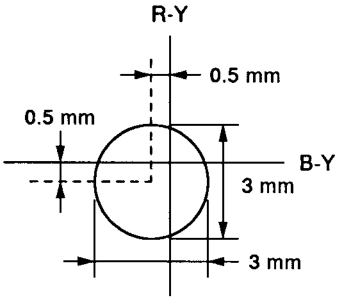


Fig. 6-1-11. B

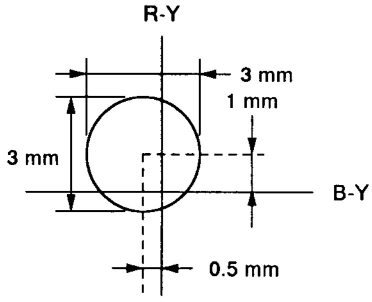


Fig. 6-1-11. C

Switch setting:

1) STEADY SHOT switch (S009 on CF-4260 board)······ OFF
2) DIGITAL ZOOM switch (Menu display)·················· OFF

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 01 to page: 6, address: 32.
4) Set data: 01 to page: 6, address: 33.
5) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Check that the center of the white luminance point is within the circle shown in Fig. 6-1-11.A.
7) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
8) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
9) Place the C14 filter on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-11. B.
11) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
12) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-11. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.
4) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

15. Steady shot adjustment

- Perform the steady shot adjustment only when replacing the angular velocity sensor. When the microprocessor, circuit, etc. malfunctions, do not perform this adjustment but check operations only.
- Record the sensitivity label of the angular velocity sensor (repair part), including to which side of the board it was attached to, etc.
  If it has been attached incorrectly, the image will move up and down or to the left and right during steady shot operation. Be sure to take note of this.

Note on Angular Velocity Sensor

The sensor contains a high precision oscillator. Therefore handle it with extreme care as dropping it, etc. will disturb the balance of the oscillator and result in incorrect operations.

Switching Settings

1) Steady shot switch (CF-4260 board S009)··················ON
2) Digital zoom switch (Menu screen)························OFF
3) When removing the front panel, release the active prism lock. (Referring to the figure below, secure the lever with adhesive tape, etc.)

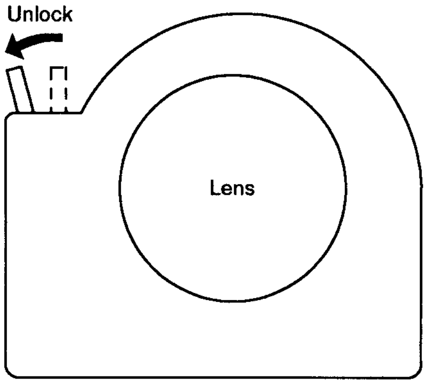
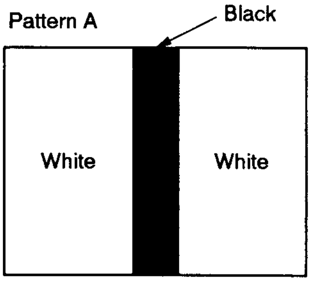


Fig. 6-1-12.

15-1. Steady Shot Adjustment (1)

Subject	Pattern A
Measuring point	Video output terminal
Measuring device	Oscilloscope
Adjustment page	F
Adjustment address	25



A4 size (297mm × 210mm)

Fig. 6-1-13.

Adjusting method:

1) Expose pattern A with the zoom TELE end.
   Note: Digital zoom (Menu screen) ························ OFF
   Active prism lock
   (Refer to Fig. 6-1-12.)······················ Release lock
2) Adjust the inclination of the camera so that the vertical black line comes to the center of the screen.
3) Set data: 01 to page: 6, address: 00.
4) Set data: 08 to page: F, address: B7, and press the PAUSE button of the adjusting remote commander.
5) Adjust to the falling edge of the waveform with vertical scale on the oscilloscope. (Oscilloscope is H period).
6) Set data: 07 to page: F, address: B7, and press the PAUSE button of the adjusting remote commander.
   At this time, measure the moving amount t1 (μsec) of the falling edge of the waveform.
7) Obtain D_{25}' using the following equation (decimal calculation).
   $$D_{25}' = \frac{3.94}{t1} \times \frac{1.00}{\text{SE401 sensor sensitivity}} \times 101$$
   Note: The SE401 sensor sensitivity of the SE-42 board is labeled only on the repair part.
8) Raise D_{25}' to a whole number, convert it to a hexadecimal digit and take this as D_{25}. (Refer to Table 6-1-4. "Hexadecimal Digit-Decimal Digit Conversion Table".)
9) Set D_{25} to page F, address: 25, and press the PAUSE button of the adjusting remote commander.
10) Set data: 08 to page F, address: B7, and press the PAUSE button of the adjusting remote commander.

Procedure after adjustment

1) Set data: 00 to page: 6, address: 00.
2) Check that the steady shot operation is performed normally.

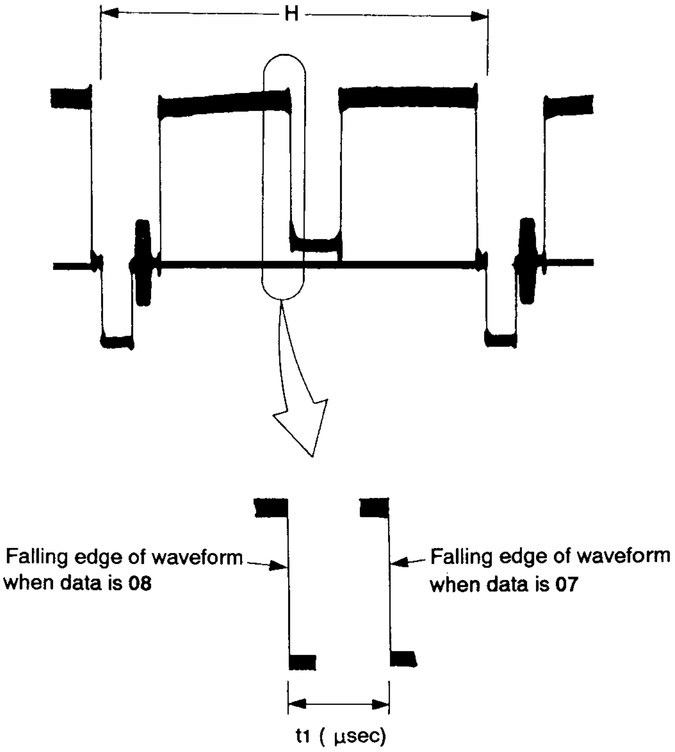
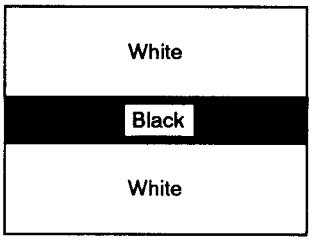

H
Falling edge of waveform when data is 08
Falling edge of waveform when data is 07
t1 (μsec)

Fig. 6-1-14.

15-2. Steady Shot Adjustment (2)

Subject	Pattern B
Measuring point	Video output terminal
Measuring device	Oscilloscope
Adjustment page	F
Adjustment address	24

Pattern B



A4 size (297mm × 210mm)

Fig. 6-1-15.

Adjusting method:

1) Expose pattern B with the zoom TELE end.
   Note: Digital zoom (Menu screen) ························ OFF
   Active prism lock
   (Refer to Fig. 6-1-12.)······················ Release lock
2) Adjust the inclination of the camera so that the horizontal black line comes to the center of the screen.
3) Set data: 01 to page: 6, address: 00.
4) Set data: 08 to page: F, address: B6, and press the PAUSE button of the adjusting remote commander.
5) Adjust the falling edge of the waveform with horizontal scale on the oscilloscope. (Oscilloscope is V period).
6) Set data: 07 to page: F, address: B6, and press the PAUSE button of the adjusting remote commander.
   At this time, measure the moving amount t2 (msec) of the falling edge of the waveform.
7) Obtain D24′ using the following equation (decimal calculation).

$$D24' = \frac{1.53}{t2} \times \frac{0.96}{\text{SE402 sensor sensitivity}} \times 103$$

   Note: The SE402 sensor sensitivity of the SE-42 board is labeled only on the repair part.
8) Raise D24′ to a whole number, convert it to a hexadecimal digit and take this as D24. (Refer to Table 6-1-4. "Hexadecimal Digit-Decimal Digit Conversion Table".)
9) Set D24 to page F, address: 24, and press the PAUSE button of the adjusting remote commander.
10) Set data: 08 to page F, address: B6, and press the PAUSE button of the adjusting remote commander.

Procedure after adjustment

1) Set data: 00 to page: 6, address: 00.
2) Check that the steady shot operation is performed normally.

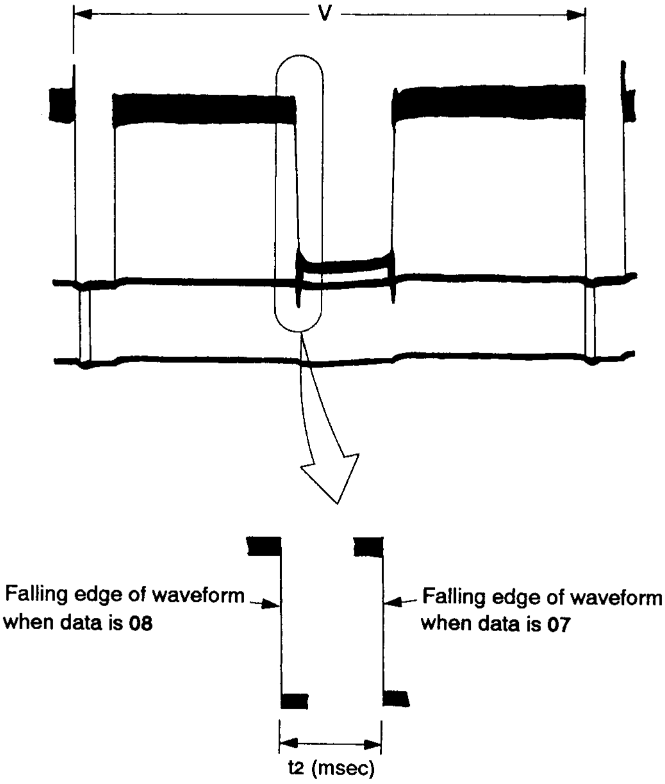

V
Falling edge of waveform when data is 08
Falling edge of waveform when data is 07
t2 (msec)

Fig. 6-1-16.

1-3. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Note 1: The backlight (fluorescent tube) is driven by a 800 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

Note 2: When replacing the LCD unit, ensure there will be no damages by static electricity.

Note 3: Set the power save switch (EVF) to "OFF" position, unless specified otherwise.

Note 4: Set the brightness indicator of viewfinder in the menu display to the center.

[Adjusting connector]

Some measuring points for adjusting the view-finder are concentrated at CN902 of the VF-81 board. Connect the measuring equipments via the measuring pin tool. The following table lists the pin numbers and signal names of CN902.

Pin No.	Signal Name	Pin No.	Signal Name
1	LC COM	2	EVF GND
3	G OUT	4	13.5V
5	NC	6	12V
7	R OUT	8	B OUT
9	NC	10	PCO

Table 6-1-5.

[Measuring pin tool]

Multi CPC jig Parts Code: J-6082-311-A or Measuring pin tool Parts Code: J-6082-192-A.

[Power Supply Voltage]

Adjust the power supply voltage for the battery pin so that Pin ⑧ (EVF UNREG) of CN851 of the VF-80 board becomes 6.0 ± 0.05 Vdc.

[Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ④ of CN851 of the VF-80 board is 1.0 ± 0.12 Vp-p before adjusting.

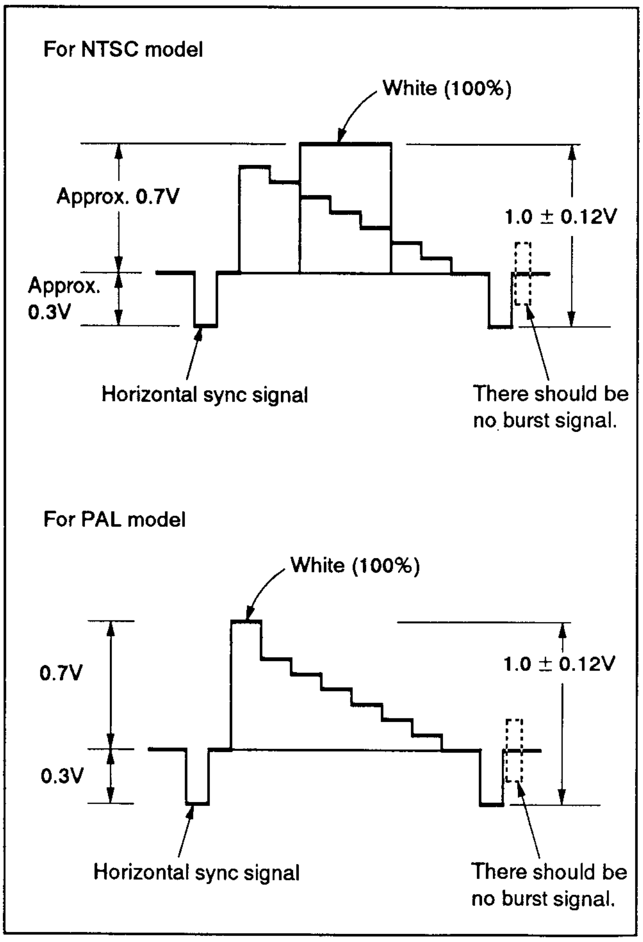

For NTSC model
White (100%)
Approx. 0.7V
1.0 ± 0.12V
Approx. 0.3V
Horizontal sync signal
There should be no burst signal.
For PAL model
White (100%)
0.7V
1.0 ± 0.12V
0.3V
Horizontal sync signal
There should be no burst signal.

Fig. 6-1-17. Color bar signal whose chroma signal and burst signals are turned off

1. Power Supply Voltage Check (VF-81 board)

Mode	Record
Measuring Instrument	Digital voltmeter
13.5V check	
Measurement Point	Pin ⑯ of CN901
Specified Value	13.5 ± 0.3 Vdc
12.0V check	
Measurement Point	Pin ⑮ of CN901
Specified Value	12.0 ± 0.3 Vdc

2. EVR Initial Data Input

Mode	STOP
Signal	Arbitary
Adjustment Page	D

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the data in the following table.
   Note: To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.
3) Set data: 00 to page: 1, address: 00.

Address	Data	
	NTSC	PAL
B0	A0	A0
B1	95	70
B2	95	50
B3	7A	7A
B4	6A	6A
B5	70	70
B6	90	90
B7	35	35
B8	7A	7A
B9	7A	7A
BA	F0	F0
BB	F0	F0

3. Current Consumption Adjustment (VF-80 board)

Adjust the luminance and color temperature of the back light.
If these are not correct, the image will be brighter or darker than normal.

Mode	Stop
Signal	Arbitary
Measurement Point	Remove R891 and measure + : Land 1 or Pin ⑧ of CN851 – : Land 2 or Pin ⑩ of CN853
Measuring Instrument	Ammeter
Adjustment Page	D
Adjustment Address	B7
Specified Value	67 ± 3 mA

Note 1: Set the power save switch (EVF) to "OFF" position.

Note 2: Wait for 30 secs. after the power supply has been turned on before this adjustment.

Note 3: After adjusting, connect R891.

Adjusting method:

1) Check that the voltage of Pin ⑧ of CN851 is 6.0 ± 0.05 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B7, and adjust the current consumption to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

VF-80 board

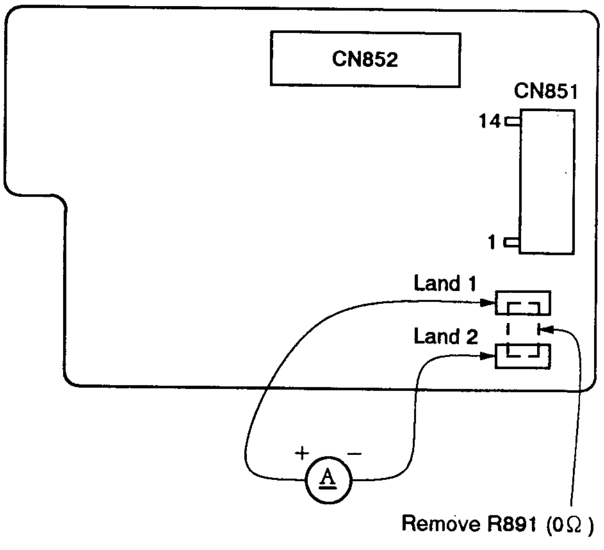


Fig. 6-1-18.

4. VCO Adjustment (VF-81 board)

Set the free running frequency of the VCO.
If it is not correct, the image will waver.

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑩ of CN902 (PCO)
Measuring Instrument	Oscilloscope (DC range)
Adjustment Page	D
Adjustment Address	B6
Specified Value	A=1.8 ± 0.1V

Adjusting method:

1) Check tha GND level of the oscilloscope.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B6, and adjust the PCO voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

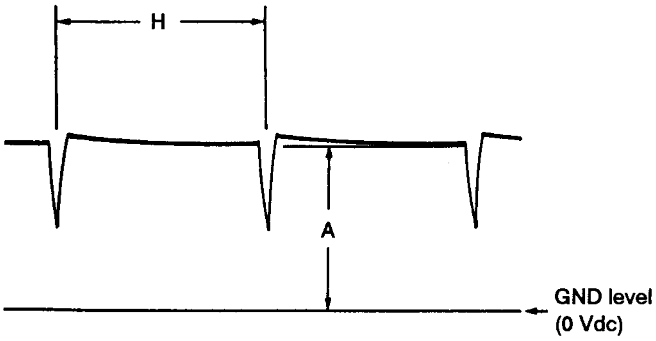


Fig. 6-1-19.

5. Bright Adjustment (VF-81 board)

Adjust to the proper LCD panel driving video signal level.
If it is not correct, the image will be saturated (whitish) or blackish.

Mode	Record
Signal	No signal
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B0
Specified Value	A=7.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B0, and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page:1, address: 00.

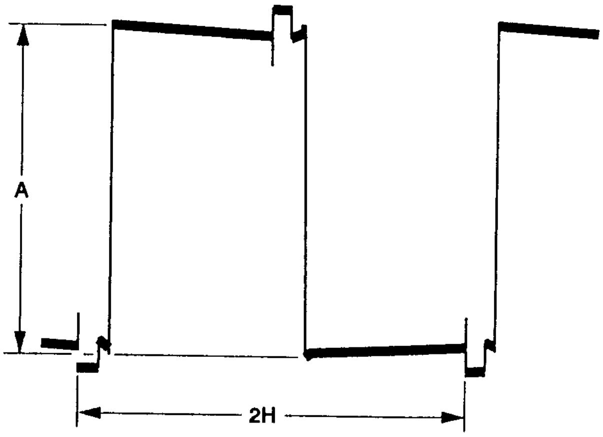


Fig. 6-1-20.

6. Contrast Adjustment (VF-81 board)

Set the contrast of the image.

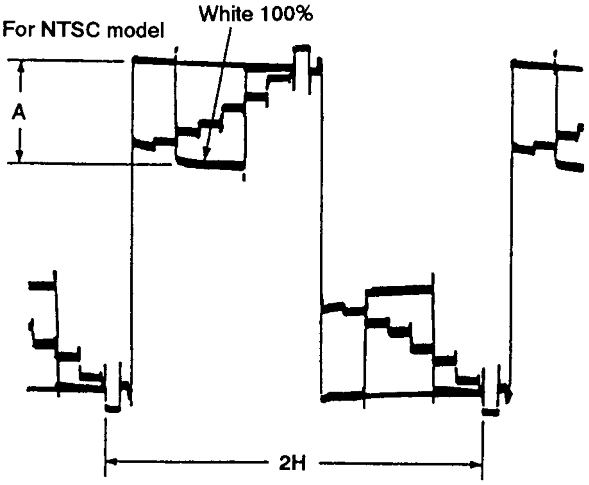
If the contrast is not correct, the image will be blur (whitish) or saturated.

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope External trigger: Pin ㉙ of IC901 (FRP)
Adjustment Page	D
Adjustment Address	B5
Specified Value	A=2.0 ± 0.1V (NTSC) A=1.9 ± 0.1V (PAL)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B5, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

For NTSC model



For PAL model

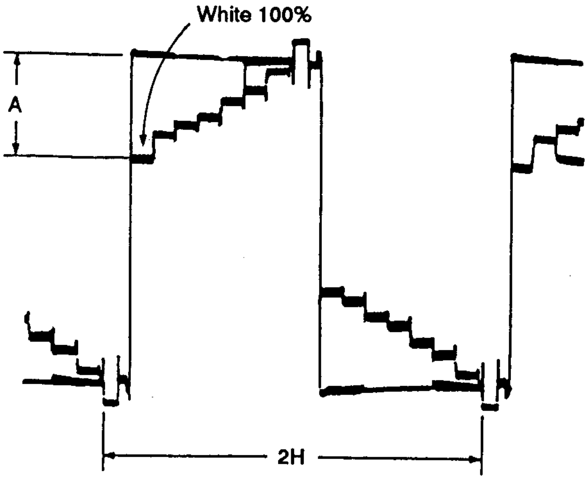


Fig. 6-1-21.

7. SUB BRIGHT R Preset Adjustment (1) (VF-81 board)

White balance rough adjustment (1)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN902 (R OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B3
Specified Value	A=7.0 ± 0.1V

Adjusting method:

1) Set the brightness indicator of viewfinder in the menu display to the center.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B3 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

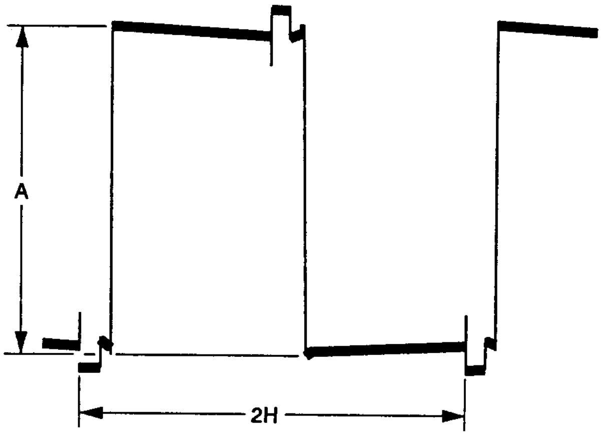


Fig. 6-1-22.

8. SUB BRIGHT B Preset Adjustment (2) (VF-81 board)

White balance rough adjustment (2)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of CN902 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B4
Specified Value	A=7.1 ± 0.1V

Adjusting method:

1) Set the brightness indicator of viewfinder in the menu display to the center.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B4 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

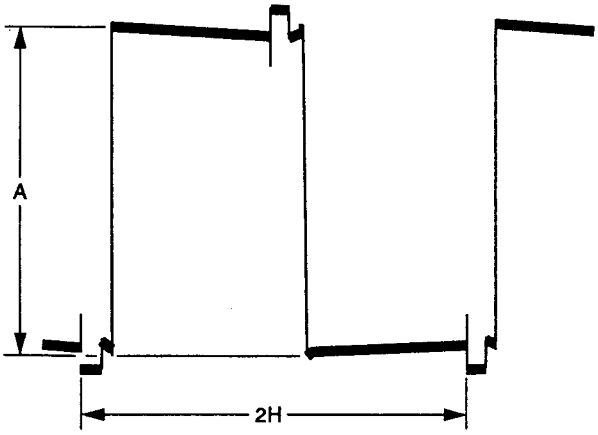


Fig. 6-1-23.

9. White Balance Adjustment

Adjust to the proper white balance level.

If it is not correct, the color reproducibility of the LCD panel will be poor.

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	B3, B4
Specified Value	The display should not be colored

Note: Wait for more than 1 minute after the power supply has been turned on before this adjustment.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Check that the LCD display is not colored. If it is, change the data of address: B3 and address: B4 of page: D, and adjustment the display is not colored.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

10. HUE Adjustment for NTSC model (VF-81 board)

Set the standard hue.

If the hue is not correct, the image will be abnormal.

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑦ of CN902 (R OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B2
Specified Value	A=0 ± 50mV

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B2, and adjust the level difference (A) of magenta and red section to minimum.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

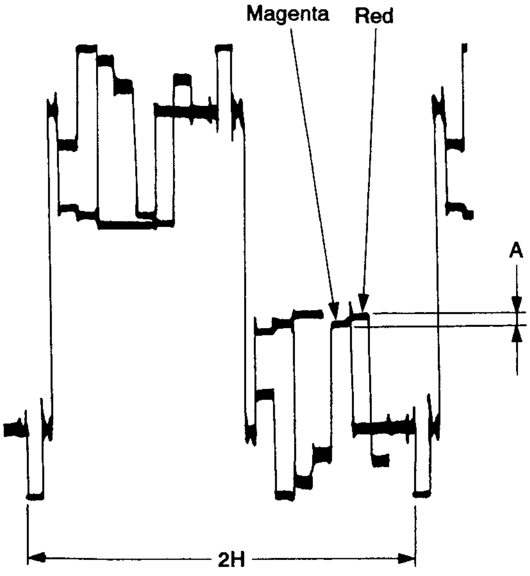


Fig. 6-1-24.

11. Burst Cleaning Adjustment for PAL model (VF-81 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑧ of CN902 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B2
Specified Value	A=0 ± 50mV

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B2, and adjust the level of flicker (A) to minimum.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

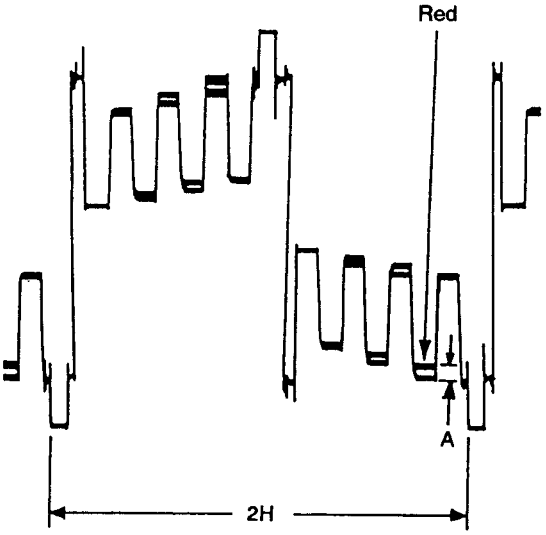


Fig. 6-1-25.

12. AUTO ON Level Adjustment

Adjust the sensitivity of the sensor for the power save operation, and set the proper turn on level of the backlight.

Mode	Recording
Signal	No signal
Adjustment Page	D
Adjustment Address	BA
Specified Value	9 to 10cm away from the lens surface of viewfinder

Switch setting:

1) POWER SAVE switch (EVF)································ON

Preparation:

1) Place a white paper (size of 30cm × 30cm) 10cm away from the lens surface of the viewfinder.

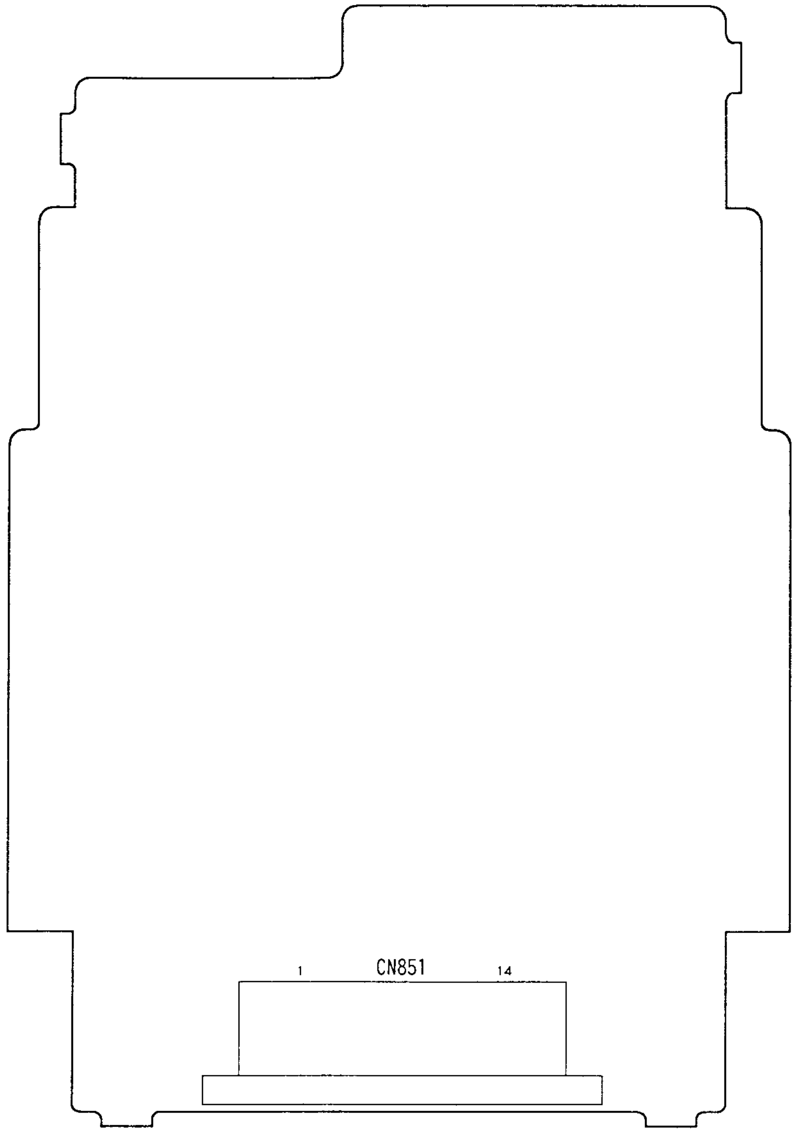
Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Increase the data of page: D, address: BA, and turn off the backlight.
3) Decrease the data of page: D, address: BA slowly until the backlight is turned on.
4) Press the PAUSE button of the adjusting remote commander.
5) Move the white paper away from the lens surface of the viewfinder, and turn off the backlight.
6) Move the white paper toward the lens surface slowly, and stop it at the moment that the backlight is turned on.
7) Check that the distance between the white paper and the lens surface is satisfies the specified value.
8) Set data: 00 to page: 1, address: 00.

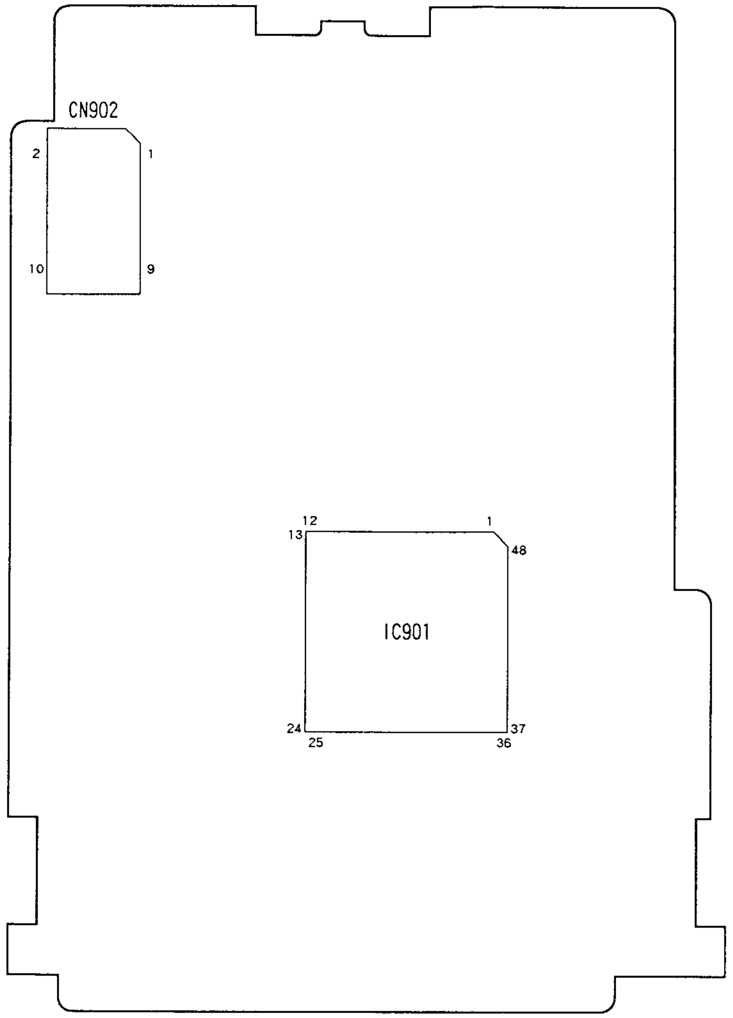
6-31

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

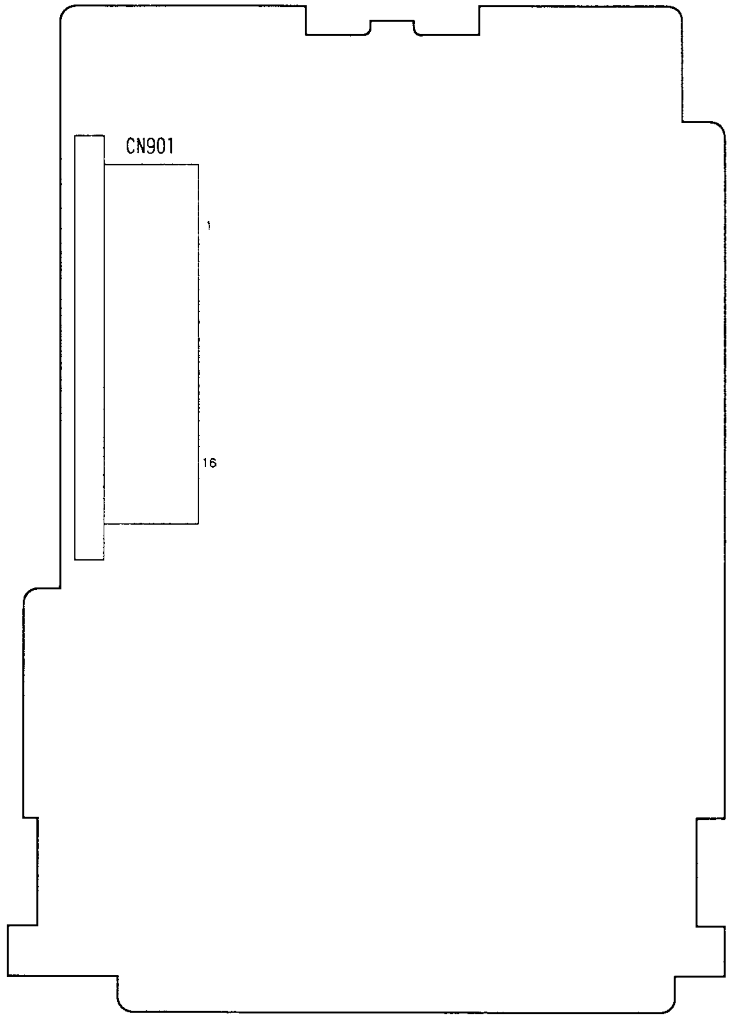
VF-80 BOARD (COMPONENT SIDE)



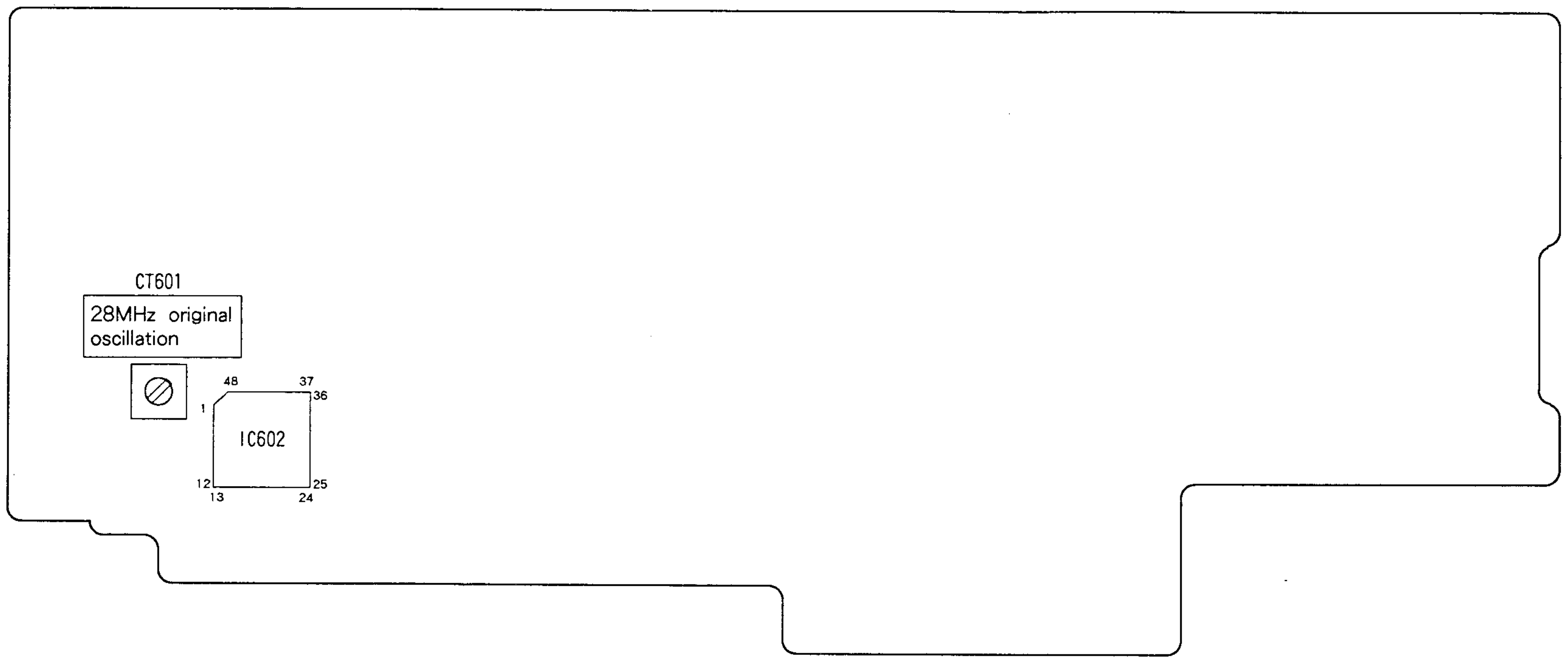
VF-81 BOARD (COMPONENT SIDE)


CN902
2
1
10
9
IC901
12
1
13
48
24
25
36
37

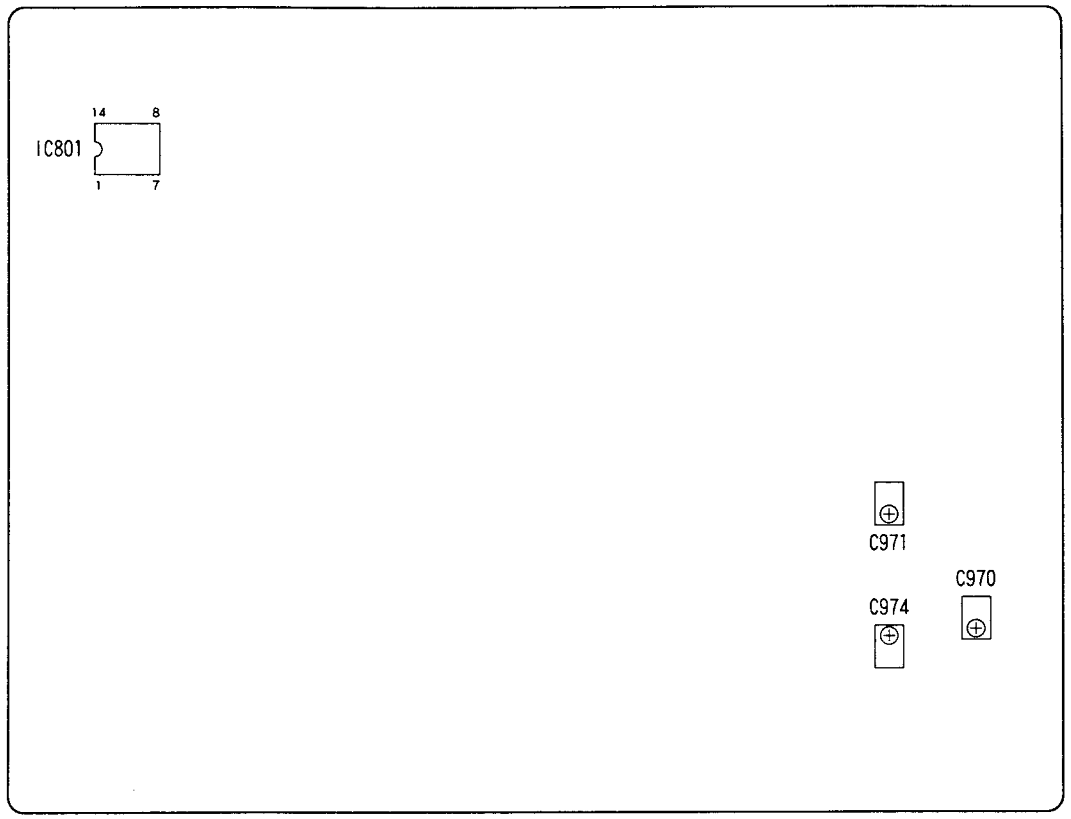
VF-81BOARD (CONDUCTOR SIDE)



VC-162 BOARD (CONDUCTOR SIDE)


CT601
28MHz original oscillation
48
37
36
1
IC602
12
13
24
25

VS-113 BOARD (CONDUCTOR SIDE)


IC801
14
8
1
7
C971
C970
C974

6-2. MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual VI TK Mechanism ".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above procedure, the unit can be operated without loading a cassette.

Be sure to carry out "Processing after Operations" after checking the operations.

Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode········· 06
Forced camera power supply ON mode······ 05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
5) Select page: D, address: 02, and set data: 03 and press the PAUSE button of the adjusting remote commander.
   (Be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ⑨ of CN002 of VS-113 board
   External trigger-Pin ④ of CN002 of VS-113 board
   (Connect the oscilloscope via the multi CPC jig (J-6082-311-A).)
7) Playback the alignment tape for tracking.
   WR5-1NP: For NTSC model
   WR5-1CP: For PAL model
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual VI (TK Mechanism)".
9) Perform "Processing after operations", after completing adjustments.

CN002 of VS-113 board

1	LANC SIG
2	LANC DC
3	CAP FG
4	RF SWP
5	$\overline{\text{1/2 RF SWP}}$
6	REC RF
7	RF GND
8	PB PCM RF
9	PB RF

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 1, address: 00, and set data: 00.
6) Remove the power supply from the unit.

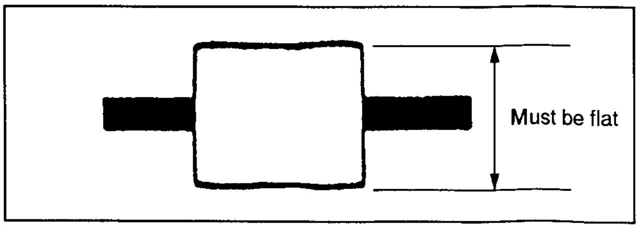


Fig. 6-2-1.

6-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–74.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape

    [For NTSC model]
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment (WR5-7NE)
      Part Code: 8-967-995-13
    - For checking Standard 8 mm mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      1) WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71

    [For PAL model]
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For video frequency characteristics adjustment (WR5-7CE)
      Part Code: 8-967-995-18
    - For checking Standard 8 mm mode operations
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Note: The following alignment tapes can also be used.
      1) WR5-3CL (8-967-995-36)
      2) WR5-4CSP (8-967-995-46)
    - For checking Hi8 mode operations
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
    - For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For checking BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76
12) Remote commander for adjustment (J-6082-053-B)
13) Multi CPC jig
    Part Code: J-6082-311-A
14) Measuring pin tool for LCD (Note 1)
    Part Code: J-6082-192-A
15) Power code
    Part Code: J-6082-223-A
16) AFM DEV jig (J-6082-312-A)

Note 1: The multi CPC jig (J-6082-311-A) can also be used.

3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the video input (S VIDEO input or VIDEO input) or the camera input. The camera input can be used for "Battery End Adjustment" and "Loading Motor ID DET Adjustment". Use the video input for the other adjustment.
   When using the video input, set the power supply switch to "PLAYER (or VTR)" or set the "forcible VTR power supply ON mode" using the adjusting remote commander. (Note 1).
   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera+VTR power supply ON mode" using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" (Note 3).
2) Front panel (MA-235 board, power supply switch, focus ring) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" is set. Disconnect the following connectors in these adjustments.
   1. 8P connector of the PF-4260 block
   2. CN504 of the MA-235 board (16P, 0.8 mm)

   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" (Note 3).
3) The camera block (The lens block, VC-162 board, CD-135 board SE-42 board) is not used for video adjustments (except for the battery end adjustment and the loading motor ID IDET adjustment). Disconnect the following connectors in these adjustments.
   1. CN702 of the VS-113 board (22P, 0.5 mm)
   2. CN701 of the VS-113 board (22P, 0.5 mm)
4) Cabinet (R) (Camera function switch (CF-4260), viewfinder, LCD) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" is set. Disconnect the following connectors in these adjustments.
   1. CN992 of the CZ-2 board (14P, 0.5 mm)
      (For viewfinder)
   2. CN993 of the CZ-2 board (20P, 0.5 mm) (For LCD)
   3. CN951 of the ZM-23 board (21P, 0.5 mm)
      (For camera function switch)

   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode". (Note 3)
   In case CN951 of the ZM-23 board is disconnected, the LITHIUM 3V power supply is disconnected, so date and time and menu setting have been by users are canceled. Perform resetting after completing adjustment.

Note 1: Setting the "forcible VTR power supply ON mode (video input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the flont panel block removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 2: Setting the "forcible camera+VTR power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 03 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with front panel block removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 3: Exiting the "forcible power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

3-1-3. Connectors for Adjustments (VS-113 board CN002)

Some video section adjustment points are concentrated on the VS-113 board CN002. Connect the measuring instrument via a multi CPC jig (J-6082-311-A).

Pin No.	Signal Name
1	LANC SIG
2	LANC DC
3	CAP FG
4	RF SWP
5	$\overline{\text{1/2 RF SWP}}$
6	REC RF
7	RF GND
8	PB PCM RF
9	PB RF

Table 6-3-1.

3-1-4. Connecting the Equipments

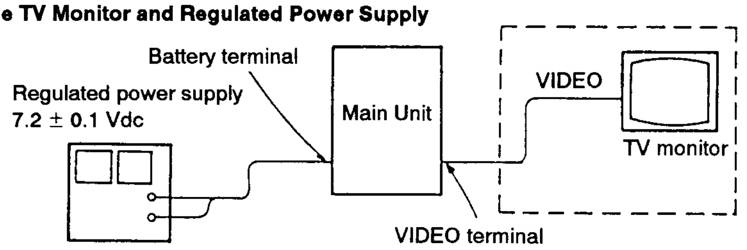
Connect the measuring instruments as shown in Fig. 6-3-1 according to the input terminal specifications (VIDEO input or S VIDEO input), and perform the adjustments.

The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

Note 1: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

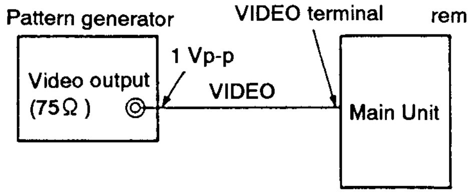
Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.

Connecting the TV Monitor and Regulated Power Supply


Battery terminal
Regulated power supply
7.2 ± 0.1 Vdc
Main Unit
VIDEO
TV monitor
VIDEO terminal

Connect when using the camera input or playing back

Connecting the Pattern Generator
[VIDEO Input]

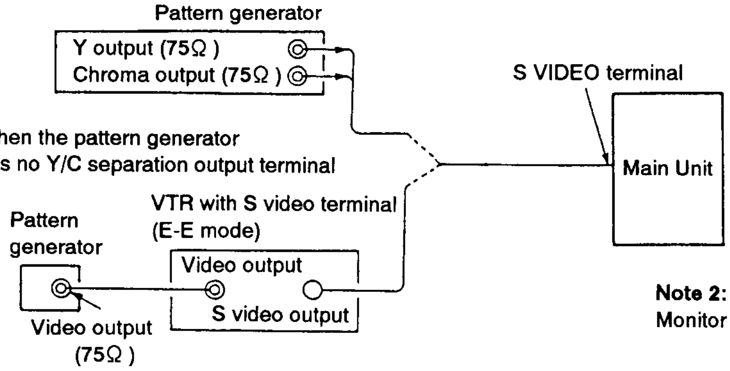

Pattern generator
VIDEO terminal
Video output
(75Ω)
1 Vp-p
VIDEO
Main Unit

Set the power supply switch to "PLAYER (or VTR)" or the adjusting remote commander to "Forcible VTR power ON mode".

Note 1: The TV monitor cannot be connected. Monitor on the viewfinder screen.

[S VIDEO Input]

- When the pattern generator has a Y/C separation output terminal


Pattern generator
Y output (75Ω)
Chroma output (75Ω)
S VIDEO terminal
Main Unit
• When the pattern generator has no Y/C separation output terminal
Pattern generator
VTR with S video terminal (E-E mode)
Video output
S video output
Video output
(75Ω)

Note 2: The TV monitor cannot be connected. Monitor on the viewfinder screen.

Fig. 6-3-1.

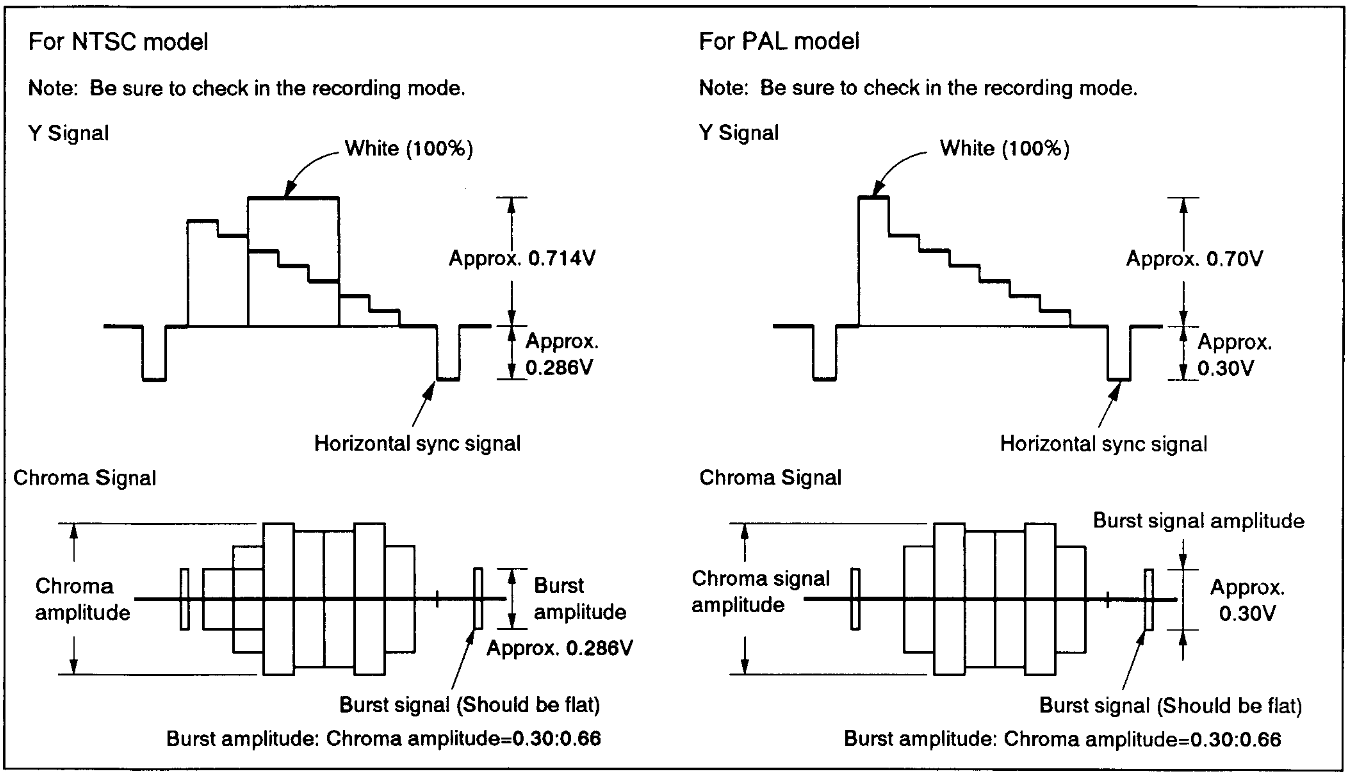
3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. CAMERA Input

Connect the oscilloscope to the Y signal terminal of the S VIDEO terminal, and check that the sync signal of the Y signal is approximately 〈0.286〉[0.30]V and that the amplitude of the video section is approximately 〈0.714〉[0.70]V. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO terminal, and check that the burst signal amplitude of the chroma signal is approximately 〈0.286〉[0.30]V and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30 : 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 6-3-2.

〈 〉: NTSC model
[ ] : PAL model


For NTSC model

Note: Be sure to check in the recording mode.

For PAL model

Note: Be sure to check in the recording mode.

Y Signal
White (100%)
Approx. 0.714V
Approx. 0.286V
Horizontal sync signal
Chroma Signal
Chroma amplitude
Burst amplitude
Approx. 0.286V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66
Y Signal
White (100%)
Approx. 0.70V
Approx. 0.30V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.30V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66

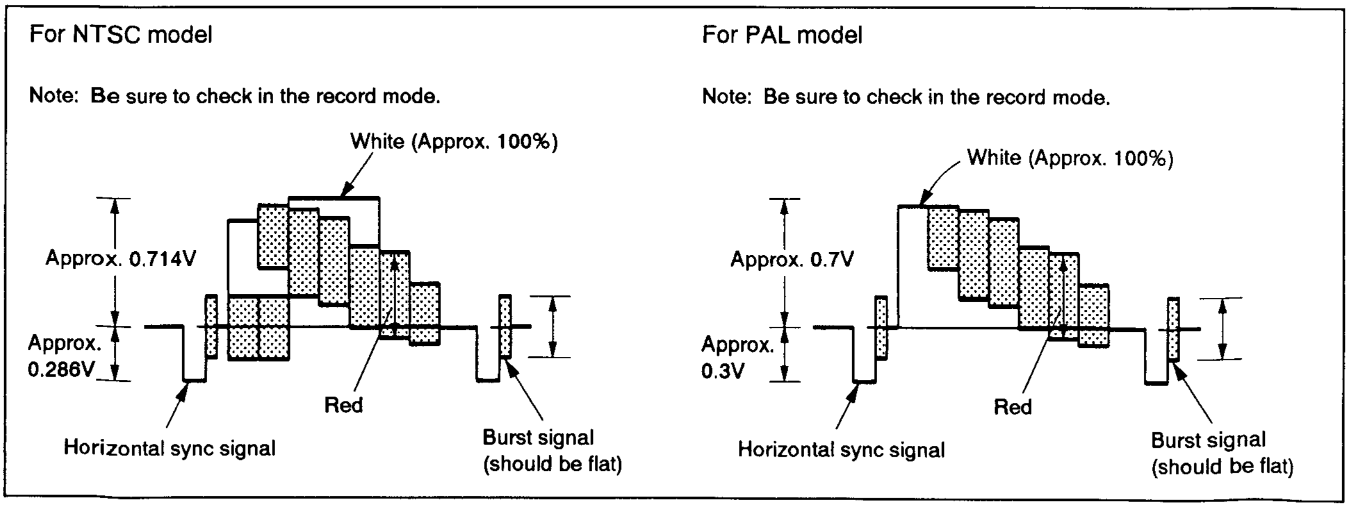
Fig. 6-3-2. Color bar signal of pattern generator

2. VIDEO Input

Connect the oscilloscope to the VIDEO terminal, and check that the sync signal amplitude of the video signal is approximately 〈0.286〉[0.30]V, the amplitude of the video section is approximately 〈0.714〉[0.70]V, the amplitude of the burst signal is approximately 〈0.286〉[0.30]V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30 : 0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 6-3-3.

〈 〉: NTSC model
[ ] : PAL model


For NTSC model

Note: Be sure to check in the record mode.

For PAL model

Note: Be sure to check in the record mode.

White (Approx. 100%)
Approx. 0.714V
Approx. 0.286V
Horizontal sync signal
Red
Burst signal (should be flat)
White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Horizontal sync signal
Red
Burst signal (should be flat)

Fig. 6-3-3. Color Bar Signal of Pattern Generator

3-1-6. How to Set the REC Mode in the Model without REC switch (AEP, UK model)

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote commander to the remote terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 1 address: 00, and set the data to 01.
   5. After memorizing data of address: 17 of page: D, Set data: 15 to the address.
   6. Press PAUSE button on the adjustment remote commander.

The REC key is accepted through the above procedure.

2. REC mode setting
   1. Turn off the HOLD switch of the adjusting remote commander.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment" after completing adjustment .

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbideden accept mode after adjustment.
   1. Connect the adjustment remoter commander.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 1 address: 00, and set the data to 01.
   5. Set data memorized at step 1)-5 to address: 17 of page: D.
   6. Press PAUSE button on the adjustment remote controller.
   7. Select the page: 1 address: 00, and set the data to 00.

3-1-7. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.
If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP (NTSC) WR5-1CP (PAL)	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE (NTSC) WR5-7CE (PAL)	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristi adjustment
Operation check (SP mode) WR5-5NSP (NTSC) WR5-5CSP (PAL)	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE (NTSC) WR5-8CSE (PAL)	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL (NTSC) WR5-4CL (PAL)	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE (NTSC) WR5-8CLE (PAL)	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS (NTSC) WR5-9CS (PAL)	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS (NTSC) WR5-11CS (PAL)	Standard 8 mm	MP	SP	BPF adjustment

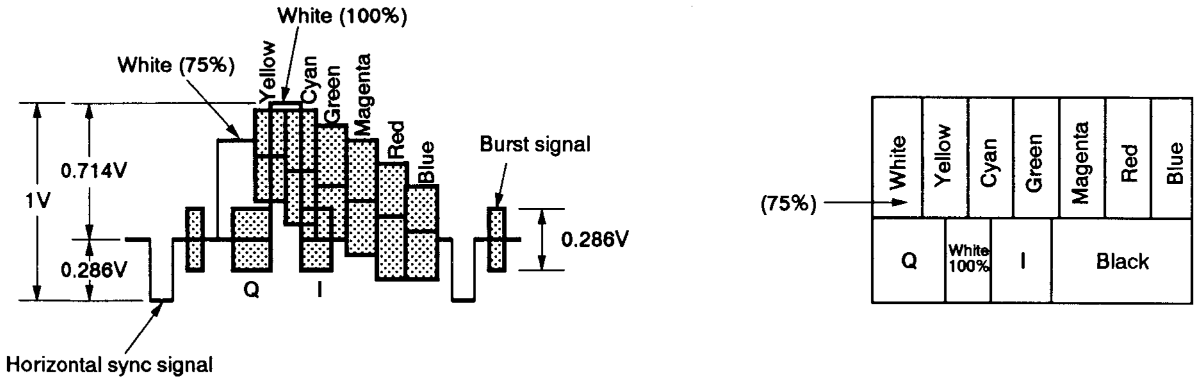
Tape type
MP············· Particle type metal tape
ME············· Evaporated type metal tape

Table 6-3-2.

Fig. 6-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)

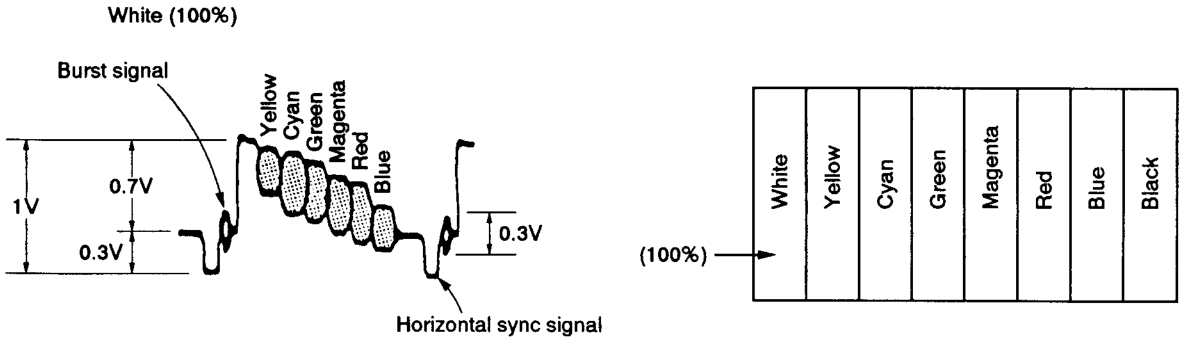
For NTSC model


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
Q
I
0.286V
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

For PAL model


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
0.7V
1V
0.3V
0.3V
Horizontal sync signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 6-3-4. Color Bar Signals of the Alignment Tape

3-1-8. Input/Output Level and Impedance

Video input/output
Phono jack, 1 Vp-p, 75Ω ,
unbalanced, sync negative
Line input is for playback only (AEP, UK model)

S video input/output
4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω , unbalanced, sync negative
Chrominance signal:
0.286Vp-p (NTSC), 0.3Vp-p (PAL) 75Ω , unbalanced
Line input is for playback only
(AEP, UK model)

Audio input/output
Phono jack,
Input: –7.5 dBs, input impedance more than 47 kΩ
Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ
Line input is for playback only (AEP, UK model)

3-1-9. Recording Mode (Normal/Hi8) switching

The record mode (Normal/Hi8) of this unit switches as shown in the following table. The playback mode (Normal/Hi8) switches automaticaly according to the recording mode of the tape played back.

Hi8 Switch (Menu Display)	Tape Used	Recording Mode
AUTO	ME	Hi8
	Hi8 MP	
	MP	Normal
OFF	ME	Normal
	Hi8 MP	
	MP	

3-1-10. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D is restored, return data of the address: 00 on page: 1 to 00. And when data on page: 2 or page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 1, address: 00 before setting the data of page D.

Page D	Address 02

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end
02	Test mode 2
03	Test mode 3 Track shift mode
04	Test mode 4 Rear lock processing mode

Page D	Address 03

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (7.2 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And set data: 00 to page: 1, address: 00.

2. Emergency Memory Address

Page D	Address E4 to EF

Address	Contents
E4	Last EMG code
E6	Upper: MSW code when the last emergency occurs Lower: MSW code when the mechanism starts shifting the last time
E7	Lower: MSW code of the last movement
E8	2nd EMG code
EA	Upper: MSW code when the 2nd emergency occurs Lower: MSW code when the mechanism starts shifting the 2nd time
EB	Lower: MSW code of the 2nd movement
EC	1st EMG code
EE	Upper: MSW code when the 1st emergency occurs Lower: MSW code when the mechanism starts shifting the 1st time
EF	Lower: MSW code of the 1st movement

When there are no emergency, data 00 will be written in the above addresses (E4 to EF). When the first emergency occurs, the data corresponding to the emergency will be written in the address (EC to EF) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (E8 to EB) for this second emergency.

The data corresponding to the emergency occurring the last will be written in the address (E4 to E7) for this last emergency.

Therefore the data of addresses E4 to E7 are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses E4 to EF to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

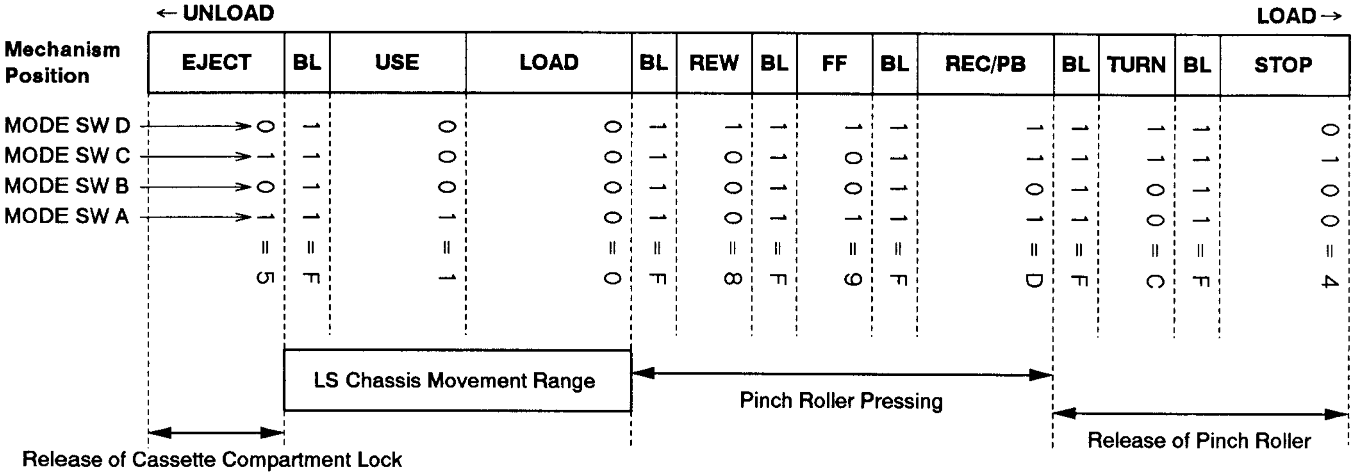
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses E4, E8, and EC.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

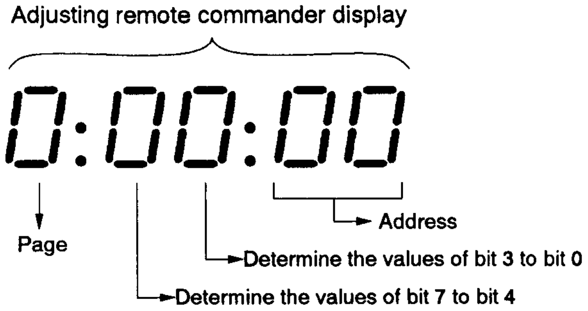
- The upper parts of the data of addresses E6, EA, and EE represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The lower parts of the data of addresses E6, EA, EE represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses E7, EB, EF represent the MSW codes of the desired movement when the mechanism position is to be moved.


← UNLOAD
LOAD →
Mechanism Position
EJECT
BL
USE
LOAD
BL
REW
BL
FF
BL
REC/PB
BL
TURN
BL
STOP
MODE SW D
MODE SW C
MODE SW B
MODE SW A
0 1 0 1 = 5
1 1 1 1 = F
0 0 0 1 = 1
0 0 0 0 = 0
1 1 1 1 = F
1 0 0 0 = 8
1 1 1 1 = F
1 0 0 1 = 9
1 1 1 1 = F
1 1 0 1 = D
1 1 1 1 = F
1 1 0 0 = C
1 1 1 1 = F
0 1 0 0 = 4
LS Chassis Movement Range
Pinch Roller Pressing
Release of Pinch Roller
Release of Cassette Compartment Lock

Mechanism Position	MSW Code	Contents
EJECT	5	Position at which the cassette compartment lock is released. Position which is mechanically nearest the unskate end side. The mechanism will not move any further in the UNLOAD direction.
BL	F	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	1	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position. The TG1 and TG9 guides will start to come out as the mechanism moves into the LOAD position. This code is wide.
LOAD	0	Code during loading. Code that is used while the LS chassis is moving. LS operations and guide loading are carried out.
REW	8	REW position. REW, FR_REV are carried at this position.
FF	9	FF position. Except during the FF mode and CUE from FF, this position is not used.
RP	D	PB, REC, CUE/REV, PAUSE positions. The pinch roller is pressed and tension regulator is on. The mechanism operates in this position in modes where normal images are displayed.
TURN	C	Position at which the pendulum gear is swung when the direction of tape running is changed while images such as PB-Review are being displayed. The pinch roller turns off with the tension regulator on.
STOP	4	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on. The mechanism will not move any further in the loading direction.
NULL	3	This code does not exist in the mechanism deck. It will be recorded in the error memory when errors occur while the loading motor is not driven.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. LED check

Page 2	Address B0

Data	
00	Normal
10	Tally LED light up. All segments of the LCD display are light up.

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparat
2	2	B0	10	Tally LED light up. All segments of the LCD display are light up.

5. Key Input check

Page 2	Address 01

Bit	Key Switch	Condition of Switch
0	Date (+) (CF-4260 S012)	"1"=OFF "0"=ON
1	Time (CF-4260 S013)	
2	Eject (FK-4260 S011)	
3	Video power supply (PF-4260 block)	
4	CC DOWN (Mechanism section)	
5	Start/Stop (CF-4260 S016)	
6	Camera power supply (PF-4260 block)	

Using method:

Order	Page	Address	Data	Procedure
1	2	00	3F	Preparation
2	2	01		The on/off of each key switch can be discriminated by differentiating the bit values of the display data.

6. Key Input check (A/D Port)

Page 2	Address 4A to 50

Display Data Address	00 to 10	11 to 4C	4D to 7E	7F to B1	B2 to E1	B2 to E1
4A (KAI0: IC702 (82))	STOP (FK-4260 S001)	FF (FK-4260 S004)	REC (FK-4260 S006, 007) (Except AEP, UK model)		MANUAL HOLD (CF-4260 S006)	No key input
4B (KAI1: IC702 (83))	PAUSE (FK-4260 S005)	REW (FK-4260 S002)	PLAY (FK-4260 S003)		16:9 WIDE TV (CF-4260 S023) (Except USA, CND model	No key input
4C (KAI2: IC702 (84))	INDEX MARK (CF-4260 S022)	▲ (CF-4260 S021)	▼ (CF-4260 S020)	EXECUTE (CF-4260 S019)	MENU (CF-4260 S018)	No key input
4D (KAI3: IC702 (85))	COUNTER RESET (CF-4260 S011)		FADER (CF-4260 S010)		STEADY SHOT OFF (CF-4260 S009)	No key input
4E (KAI4: IC702 (86))	END SEARCH (FK-4260 S010)	EDIT SEARCH (+) (FK-4260 S008)	EDIT SEARCH (–) (FK-4260 S009)	PROGRAM AE (CF-4260 S017)		No key input
4F (KAI5: IC702 (87))	STILL/FLASH (+) (CF-4260 S005) (PAL model)	PICTURE EFECT (CF-4260 S007)			FOCUS MANUAL (CF-4260 S007)	No key input
50 (KAI6: IC702 (88))	IRIS (CF-4260 S005)	SHUTTER (CF-4260 S004)	GAIN (CF-4260 S003)	WHITE BALANCE (CF-4260 S002)	AUTO LOCK (CF-4260 S006)	No key input

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Preparation
2	2	4A to 50		The key pressed can be discriminated by the display data of each address.

7. Mode switch and CC DOWN switch check

The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW D	MSW C	MSW B	MSW A				

				Display Data	Mode Switch Position
0	1	0	1	5 *	EJECT
0	0	0	1	1 *	USE
0	0	0	0	0 *	LOAD
1	0	0	0	8 *	REW
1	0	0	1	9 *	FF
1	1	0	1	D*	RP (REC, PB, CUE, REVIEW, PAUSE)
1	1	0	0	C *	TURN
0	1	0	0	4 *	STO

*: 0 to F

Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position can be discriminated by the display data.

8. Individual operations of the drum, capstan, and loading motor

Page 3	Address 11

Display	Operations
00	Normal
02	Drum in normal rotation
04	Drum in reverse rotation
06	Capstan in normal rotation
08	Capstan in reverse rotation
0A	Loading motor in normal rotation
0C	Loading motor in reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation 1.
2	3	0E	01	Preparation 2.
3	3	11		The motor can be operated individually by setting the data indicated above.
4				Turn off the main power supply (7.2 Vdc).

9. Page D address list for NTSC model

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 96 to AF, BC to C3 and F0 to FF. This has no relation to the adjustment.

Note 4: [ ] : US, CND model
⟨ ⟩ : Other models

Address	Adjustment data	
	Initial value	Memo column
00	00	00
01	00	00
02	00	00
03	00	00
04	00	
05	80	
06		
07		
08		
09		
0A		
0B		
0C	0C	0C
0D	00	00
0E	00	00
0F	05	05
10	40	40
11	23	23
12	00	00
13	00	00
14	B8	B8
15	9A	9A
16	06	06
17	12	12
18	E1	E1
19	0E	0E
1A	D6	D6
1B	[68] ⟨69⟩	[68] ⟨69⟩
1C	1E	1E
1D	00	00
1E	00	00
1F	00	00

Table 6-3-3. (1)

Address	Adjustment data	
	Initial value	Memo column
20	[4D] ⟨62⟩	[4D] ⟨62⟩
21	[08] ⟨0C⟩	[08] ⟨0C⟩
22	29	29
23	03	03
24	33	33
25	00	00
26	18	18
27	28	28
28	E4	E4
29	E4	E4
2A	DC	DC
2B	EF	EF
2C	E4	E4
2D	E4	E4
2E	DC	DC
2F	EF	EF
30	B0	
31	B0	
32	B0	
33	B0	
34	FF	FF
35	FF	FF
36	FF	FF
37	FF	FF
38	C6	
39	D2	
3A	C6	
3B	D2	
3C	C6	
3D	D2	
3E	C6	
3F	D2	
40	C3	
41	C8	
42	C1	
43	C1	
44	C3	
45	C8	
46	C1	
47	C1	
48	C3	
49	C8	

Table 6-3-3. (2)

Address	Adjustment data	
	Initial value	Memo column
4A	C1	
4B	C1	
4C	C3	
4D	C8	
4E	C1	
4F	C1	
50	D4	D4
51	D4	D4
52	D4	D4
53	D4	D4
54	B4	B4
55	AA	AA
56	85	85
57	76	76
58	76	76
59	76	76
5A	E0	
5B	E0	
5C	E0	
5D	E0	
5E	E0	
5F	E0	
60	E0	
61	E0	
62	E0	
63	E0	
64	E1	
65	E1	
66	E1	
67	E1	
68	E1	
69	DF	
6A	DF	
6B	DF	
6C	DF	
6D	DF	
6E	C0	C0
6F	3C	
70	81	
71	96	
72	B0	B0
73	B0	B0

Table 6-3-3. (3)

Address	Adjustment data	
	Initial value	Memo column
74	BE	
75	B9	
76	AF	
77	B0	
78	68	68
79	5E	5E
7A	81	81
7B	81	81
7C	00	00
7D	00	00
7E	00	00
7F	00	00
80	A6	
81	A0	
82	9A	
83	96	
84	FF	FF
85	A0	A0
86	B7	
87	AA	
88	00	00
89	00	00
8A	00	00
8B	50	50
8C	BC	BC
8D	BC	
8E	60	
8F	45	
90	00	00
91	FF	FF
92	FF	FF
93	FF	FF
94	76	76
95	3E	
96 to AF	FF	
B0	A0	
B1	95	95
B2	95	
B3	7A	
B4	6A	
B5	70	
B6	90	

Table 6-3-3. (4)

Address	Adjustment data	
	Initial value	Memo column
B7	35	
B8	7A	7A
B9	7A	7A
BA	F0	
BB	F0	F0
BC to C3	FF	
C4	80	80
C5	70	70
C6	68	68
C7	60	60
C8	5C	5C
C9	50	50
CA	46	46
CB	3C	3C
CC	30	30
CD	26	26
CE	1C	1C
CF	10	10
D0	00	00
D1	00	00
D2	00	00
D3	00	00
D4 to E3	FF	
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	

Table 6-3-3. (5)

10. Page D address list for PAL model

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 96 to AF, BC to C3 and F0 to FF. This has no relation to the adjustment.

Note 4: [ ] : AEP, UK model
〈 〉 : Other models

Address	Adjustment data	
	Initial value	Memo column
00	00	00
01	00	00
02	00	00
03	00	00
04	00	
05	80	
06		
07		
08		
09		
0A		
0B		
0C	0C	0C
0D	00	00
0E	00	00
0F	05	05
10	40	40
11	23	23
12	00	00
13	00	00
14	B8	B8
15	9A	9A
16	04	04
17	[04] 〈15〉	[04] 〈15〉
18	E1	E1
19	0E	0E
1A	[D6] 〈F6〉	[D6] 〈F6〉
1B	69	69
1C	1E	1E
1D	04	04
1E	00	00
1F	00	00

Table 6-3-4. (1)

Address	Adjustment data	
	Initial value	Memo column
20	62	62
21	1C	1C
22	29	29
23	03	03
24	77	77
25	FF	FF
26	1C	1C
27	25	25
28	A8	A8
29	AD	AD
2A	DC	DC
2B	DF	DF
2C	A8	A8
2D	A5	A5
2E	DC	DC
2F	DD	DD
30	9C	
31	9C	
32	9C	
33	9C	
34	9C	
35	9C	
36	9C	
37	9C	
38	D0	
39	DC	
3A	D0	
3B	DC	
3C	D0	
3D	DC	
3E	D0	
3F	DC	
40	AD	
41	BE	
42	B9	
43	B9	
44	AD	
45	BE	
46	B9	
47	B9	
48	AD	
49	BE	

Table 6-3-4. (2)

Address	Adjustment data	
	Initial value	Memo column
4A	B9	
4B	B9	
4C	AD	
4D	BE	
4E	B9	
4F	B9	
50	D4	D4
51	D4	D4
52	D4	D4
53	D4	D4
54	B4	B4
55	C1	C1
56	90	90
57	76	76
58	76	76
59	76	76
5A	D7	
5B	D7	
5C	D7	
5D	D7	
5E	D7	
5F	D7	
60	D7	
61	D7	
62	D7	
63	D7	
64	D7	
65	D7	
66	D7	
67	D7	
68	D7	
69	D7	
6A	D7	
6B	D7	
6C	D7	
6D	D7	
6E	C0	C0
6F	3C	
70	94	
71	9A	
72	B0	B0
73	B0	B0

Table 6-3-4. (3)

Address	Adjustment data	
	Initial value	**Memo column**
74	D6	
75	C8	
76	AF	
77	B0	
78	45	45
79	4B	4B
7A	8A	8A
7B	8A	8A
7C	40	40
7D	30	30
7E	64	64
7F	64	64
80	91	
81	99	
82	AC	
83	A0	
84	FF	FF
85	A0	A0
86	95	
87	8D	
88	00	00
89	00	00
8A	00	00
8B	50	50
8C	BC	BC
8D	BC	
8E	60	
8F	45	
90	00	00
91	FF	FF
92	FF	FF
93	FF	FF
94	76	76
95	3E	
96 to AF	FF	
B0	A0	
B1	70	70
B2	50	
B3	7A	
B4	6A	
B5	70	
B6	90	

Table 6-3-4. (4)

Address	Adjustment data	
	Initial value	**Memo column**
B7	35	
B8	7A	7A
B9	7A	7A
BA	F0	
BB	F0	F0
BC to C3	FF	
C4	80	80
C5	70	70
C6	68	68
C7	60	60
C8	5C	5C
C9	50	50
CA	46	46
CB	3C	3C
CC	30	30
CD	26	26
CE	1C	1C
CF	10	10
D0	00	00
D1	00	00
D2	00	00
D3	00	00
D4 to E3	FF	
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	

Table 6-3-4. (5)

3-2. POWER SYSTEM ADJUSTMENTS

1. Power Voltage Check (VS-113 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
REG 4.7V check	
Measurement Point	C969 ⊕ (CL957)
Specified Value	4.7 ± 0.1 Vdc
REG 3.5V check	
Measurement Point	C971 ⊕ (CL958)
Specified Value	3.55 ± 0.1 Vdc
REG 4.9V check	
Measurement Point	C970 ⊕ (CL959)
Specified Value	4.9 ± 0.1 Vdc
REG 15V check	
Measurement Point	C974 ⊕ (CL961)
Specified Value	15.07 ± 0.28 Vdc
AU –7.5V check	
Measurement Point	Pin ⑦ of IC801 (CL963)
Specified Value	–7.5 ± 0.5 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list for NTSC model" in "3-1-9" or "Page D address list for PAL model" in "3-1-10. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 95, B0 to BB, C4 to D3, E4 to EF

Input method:

1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)
3) Set data: 00 to page: 1, address: 00.

2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	06, 07, 08, 09, 0A, 0B

Switch setting

1) AUTO FOCUS switch ·· OFF
2) Cover the eyepiece of the viewfinder with a white paper, and turn on the backlight.

Connection:

1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 6-3-5.

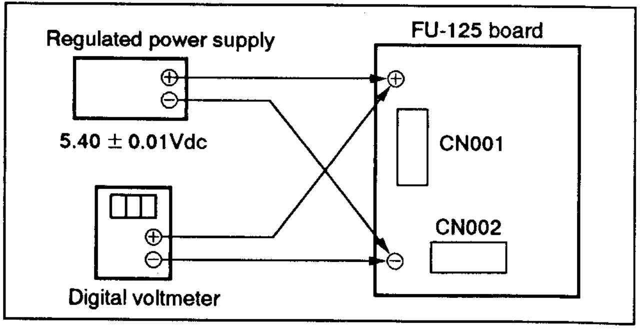


Fig. 6-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.40 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
5) Select page: 2, address: 49, read the adjusting remote commander display data, and this data is named D6.
6) Set data D6 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D6 to decimal notation, and obtain D6′. (Refer to Table 6-1-4. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D7′, D8′, D9′, DA′ and DB′ using following equations (decimal notation calculation).

   D7′=D6′+3
   D8′=D6′+29
   D9′=D6′+44
   DA′=D6′+52
   DB′=D6′+9
9) Convert D7′, D8′, D9′, DA′ and DB′ to hexadecimal notation, and obtain D7, D8, D9, DA and DB.
10) Set data: D7 to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D8 to page: D, address: 08, and press the PAUSE button.
12) Set data: D9 to page: D, address: 09, and press the PAUSE button.
13) Set data: DA to page: D, address: 0A, and press the PAUSE button.
14) Set data: DB to page: D, address: 0B, and press the PAUSE button.
15) Set data: 00 to page: 1, address: 00

3. Loading Motor ID DET Adjustment

- Perform this adjustment only when the EEPROM data (D page, address 95) has become damaged.

  Example) • When replacing IC703 of the VS-113 board (EEPROM).
  • When rewriting the data of page D, address 95 accidentally, and the correct data was not noted down before rewriting.
- When the following problems occur in the above conditions, perform "Loading Motor ID DET Adjustment".

1) When the cassette is loaded, the cassette does not load properly, returns and is ejected.
2) When the cassette is loaded, if loading operation is stopped with your finger, etc., it takes more than 4 seconds until eject starts.

3-1. Loading Motor ID DET Adjustment

Measuring device	Stopwatch, etc.
Adjustment page	D
Adjustment address	95

Note: Perform this adjustment after the unit has been assembled completely.

Adjusting method:

1) Eject the cassette.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 30 to page: D, address: 95.
4) Close the cassette compartment.
5) During loading, apply force to the cassette compartment in the eject direction with your finger, and stop loading completely. At this time, measure the time (t) taken until eject is started after loading has stopped completely.

   [When (t) is less than 1 second]
   Set data: 40 to page: D, address: 95, and perform step 6) onwards.
   [When (t) is more than 4 seconds]
   Perform step 8) onwards.
6) Close the cassette compartment.
7) During loading, apply force to the cassette compartment in the eject direction with your finger, and stop loading operations completely. At this time. measure the time (t) taken until eject is started after loading has stopped completely.

   [When (t) is less than 5 seconds]
   - When the data of page: D, address: 95 is 40 to E0:
     Increase the data by 10 (hexadecimal digit), and return to step 6). (The data increases in the order of 40, 50, 60..., E0, F0.).
   - When the data of page: D, address: 95 is F0:
     Set the data to FF, and return to step 6).
   - When the data of page: D, address: 95 is FF, and (t) is within 1 second:
     In this state, press the PAUSE button of the adjusting remote commander, and perform step 9) onwards.

   [When (t) is more than 5 seconds]
   Perform step 8) onwards.
8) Decrease the data of page: D, address: 95 by 20 (hexadecimal digit), and press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 1, address: 00.
10) Check the operation.
    - The cassette should load normally.
    - When loading the cassette, if loading is stopped with your finger, etc., the time until eject starts should be less than 1 second.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-113 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC) WR5-1CP (PAL))
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ⑨ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04, 05
Specified Value	t1=0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1", and press the PAUSE button of the adjusting remote commander. (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 1, address: 00.

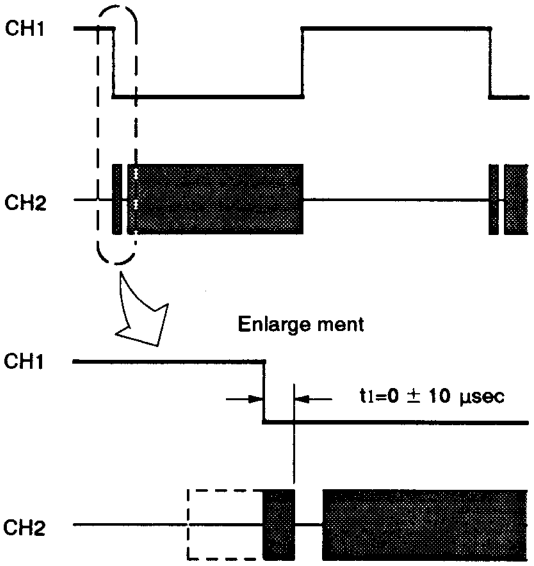


Fig. 6-3-6.

2. CAP FG Offset Adjustment (VS-113 board)

Improve the capstan servo characteristic. If it is not correct, jitters will increase.

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ③ of CN002 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	6F
Specified Value	Duty=50 ± 1.5%

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 3C to page: D, address: 6F.
3) Change the data of page: D, address: 6F, and adjust the duty of the CAP FG waveform to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Set data: 00 to page: 1, address: 00.

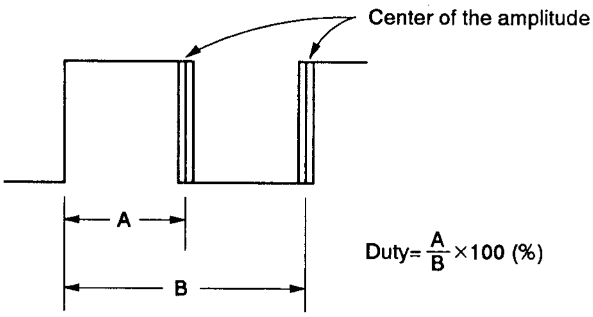


Fig. 6-3-7.

3-5. VIDEO SYSTEM ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) VXO oscillation frequency check
3) SYNC AGC level adjustment
4) Comb filter adjustment
5) Emphasis input level adjustment
6) DE EMPH level adjustment
7) PB Y out level adjustment
8) Standard 8 mm modeY FM carrier frequency adjustment
9) Standard 8 mm modeY FM deviation adjustment
10) Hi8 mode Y FM carrier frequency adjustment
11) Hi8 mode Y FM deviation adjustment
12) Chroma emphasis adjustment
13) REC Y level adjustment
14) REC L adjustment
15) REC CHROMA level adjustment

1. Playback Frequency Characteristics Adjustment

1-1. Playback Frequency Characteristics Adjustment for NTSC model (VS-113 board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-7NE)
Measurement Point	Pin ⑨ of CN002 (PB RF)
Measuring Instrument	Oscilloscope Ext. trigger: Pin ⑤ of CN002 (1/2 RF SWP)
Adjustment Page	D
Adjustment Address	5A to 6D
Specified Value	4.5 MHz level: 8.5 MHz level=3: 2

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of each address (5A, 5F, 64 and 69) of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of each PB RF output waveform of 1A, 1B, 2A, 2B to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
3) Read the data of page: D, address: 5A, and this data is named D5A.
4) Read the data of page: D, address: 5F, and this data is named D5F.
5) Read the data of page: D, address: 64, and this data is named D64.
6) Read the data of page: D, address: 69, and this data is named D69.
7) Set data to address: 5B to 6D of page: D as shown in following table.
   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)
8) Set data: 00 to page: 1, address: 00.

Address	Data	Address	Data	Address	Data	Address	Data
5B	D5A	60	D5F	65	D64	6A	D69
5C	D5A	61	D5F	66	D64	6B	D69
5D	D5A	62	D5F	67	D64	6C	D69
5E	D5A	63	D5F	68	D64	6D	D69

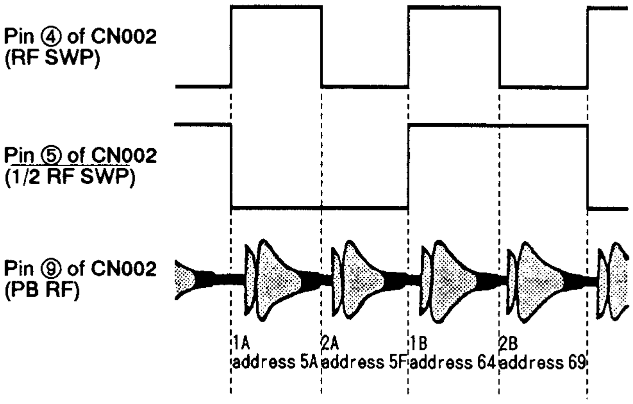


Fig. 6-3-8.

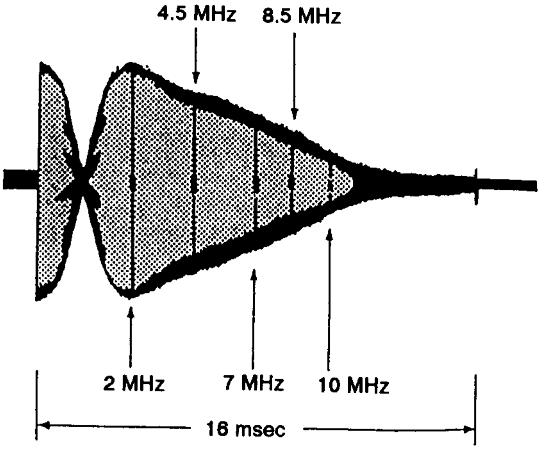


Fig. 6-3-9.

1-2. Playback Frequency Characteristics Adjustment for PAL model (VS-113 board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-7CE)
Measurement Point	Pin ⑨ of CN002 (PB RF)
Measuring Instrument	Oscilloscope Ext. trigger: Pin ⑤ of CN002 ($\overline{\text{1/2 RF SWP}}$)
Adjustment Page	D
Adjustment Address	5A to 6D
Specified Value	4.5 MHz level: 8.5 MHz level=3: 2

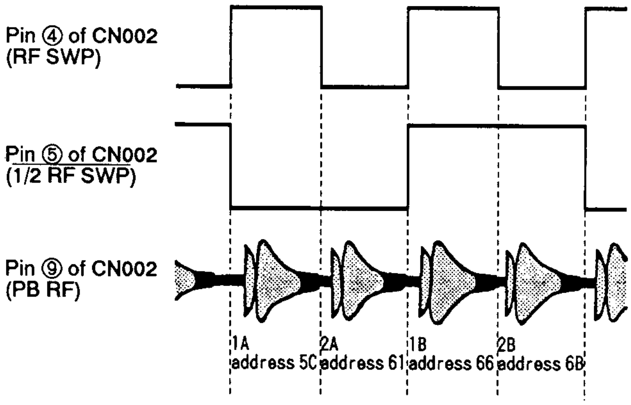


Fig. 6-3-10.

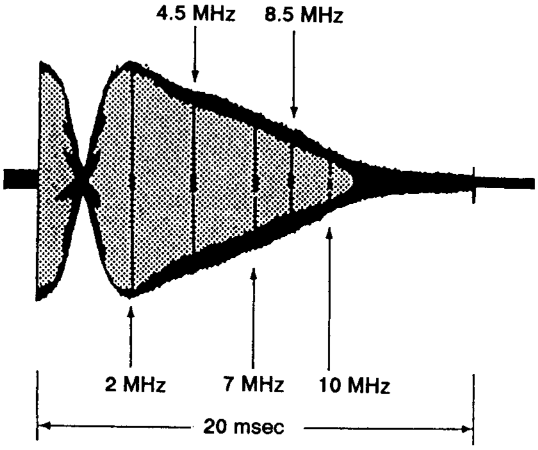


Fig. 6-3-11.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of each address (5C, 61, 66 and 6B) of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of each PB RF output waveform of 1A, 1B, 2A, 2B to the specified value.

   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
3) Read the data of page: D, address: 5C, and this data is named D_{5C}.
4) Read the data of page: D, address: 61, and this data is named D_{61}.
5) Read the data of page: D, address: 66, and this data is named D_{66}
6) Read the data of page: D, address: 6B, and this data is named D_{6B}.
7) Set data to address: 5A to 6D of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)
8) Set data: 00 to page: 1, address: 00.

Address	Data	Address	Data	Address	Data	Address	Data
5A	D_{5C}	5F	D_{61}	64	D_{66}	69	D_{6B}
5B	D_{5C}	60	D_{61}	65	D_{66}	6A	D_{6B}
5D	D_{5C}	62	D_{61}	67	D_{66}	6C	D_{6B}
5E	D_{5C}	63	D_{61}	68	D_{66}	6D	D_{6B}

2. VXO Oscillation Frequency Check (VS-113 board)

Mode	Record
Signal	Color bar
Measurement Point	Emitter of Q213 (CL218) or Pin ㉑ of CN702
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 50 Hz (NTSC) 4433619 ± 50 Hz (PAL)

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of Emitter of Q213 is satisfies the specified value.

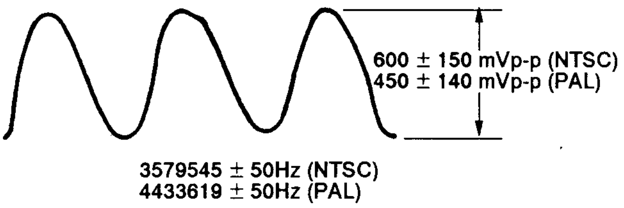

600 ± 150 mVp-p (NTSC)
450 ± 140 mVp-p (PAL)
3579545 ± 50Hz (NTSC)
4433619 ± 50Hz (PAL)

Fig. 6-3-12.

3. SYNC AGC Level Adjustment (VS-113 board)

Adjust so that the Y signal level to be recorded becomes consistent.

Mode	Record
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ㉞ of IC201 (Y IN) (CL202) or Pin ⑬ of IC421
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=0.495 ± 0.01V (NTSC) A=0.50 ± 0.01V (PAL)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

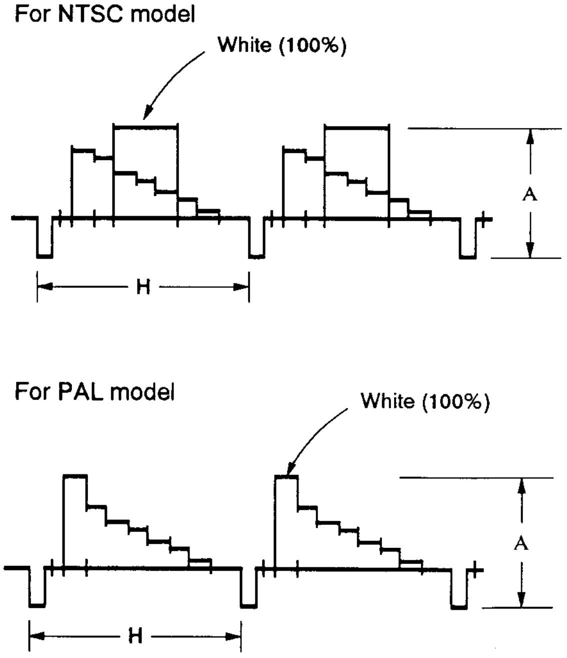

For NTSC model
White (100%)
A
H
For PAL model
White (100%)
A
H

Fig. 6-3-13.

4. Comb Filter Adjustment (VS-113 board)

Set the level and phase of the 〈1H〉 [2H] delayed signal for the comb filter.

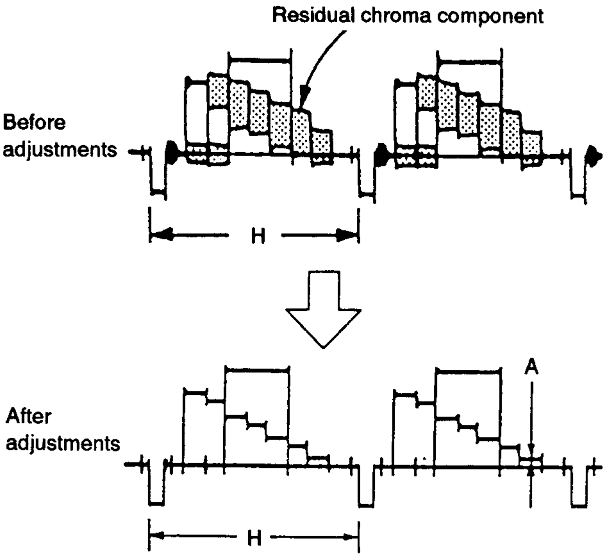
〈 〉 : NTSC
[ ] : PAL

Mode	Record
Signal	Color bar (VIDEO input)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT) (CL211)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201 (PHASE)
Adjustment Page	D
Adjustment Address	71
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
5) Adjust RV201 so that the residual chroma component becames minimum.
6) Repeat 4) and 5).
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 1, address: 00.

For NTSC model


Residual chroma component
Before adjustments
H
After adjustments
A
H

For PAL model

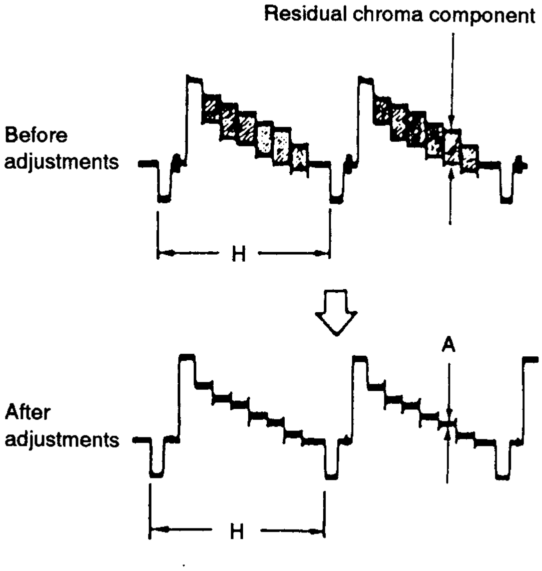

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 6-3-14.

5. Emphasis Input Level Adjustment (VS-113 board)

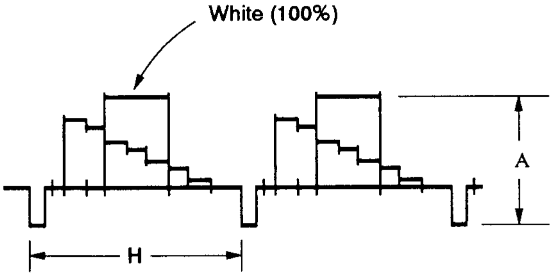
Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Record
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205 (CL213)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

For NTSC model



For PAL model

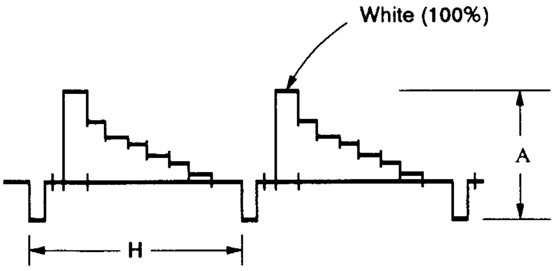


Fig. 6-3-15.

6. DE EMPH Level Adjustment (VS-113 board)

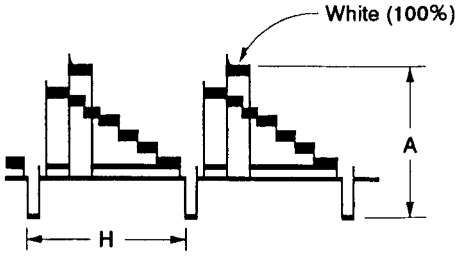
De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section Standard 8 mm mode WR5-5NSP (NTSC) WR5-5CSP (PAL) Hi8 mode WR5-8NSE (NTSC) WR5-8CSE (PAL)
Measurement Point	Pin ⑰ of IC201 (DL IN 2) (CL207)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	86, 87
Specified Value	A=0.50 ± 0.01V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Play back the color bar section of the standard 8 mm mode alignment tape.
3) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Play back the color bar section of the Hi8 mode alignment tape.
6) Change the data of page: D, address: 86, and adjust so that the Y signal level (A) becomes the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 1, address: 00.
9) Perform "PB Y OUT Level Adjustment".

For NTSC model



For PAL model

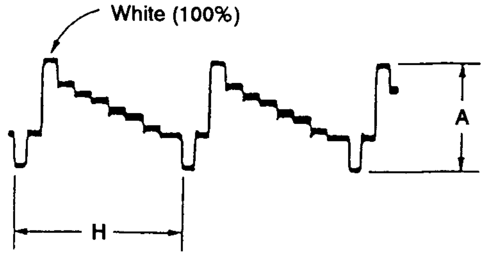


Fig. 6-3-16.

7. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP (NTSC) WR5-5CSP (PAL)) Color bar section
Measurement Point	Pin ⑦ of CN423 (S-Y I/O) (CL484)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.0 ± 0.01V

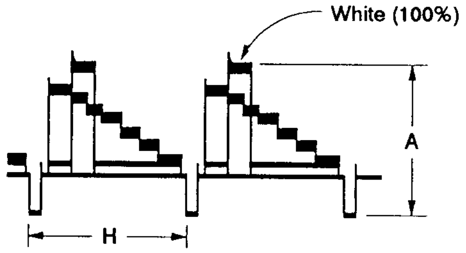
Note 1: Terminate the Y signal terminal of the S VIDEO terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Note 2: Insert a plug into the S VIDEO terminal.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.

For NTSC model



For PAL model

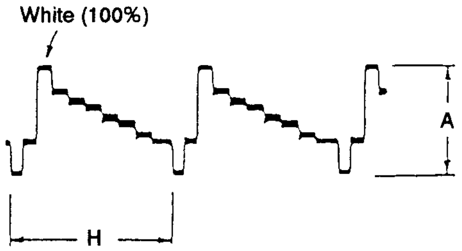


Fig. 6-3-17.

8. Standard 8 mm Mode Y FM Carrier Frequency Adjustment (VS-113 board)

Standard 8 mm mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (S VIDEO input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (CL201)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.04 MHz

Adjusting method:

1) Load a normal MP tape, and set the recording mode.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

4.385 ± 0.04 MHz

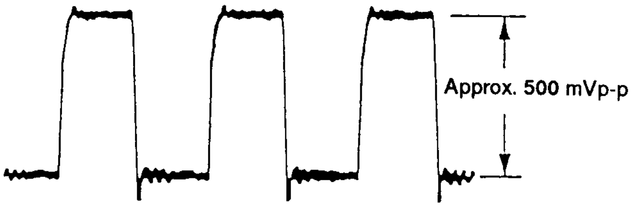


Fig. 6-3-18.

9. Standard 8 mm Mode Y FM Deviation Adjustment (VS-113 board)

Standard 8 mm mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ⑰ of IC201 (DL IN 2) (CL207)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

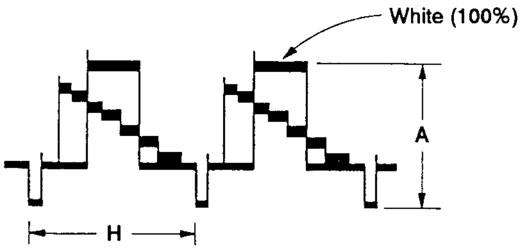
Adjusting method:

1) Load a normal MP tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 1, address: 00.
9) Perform "Y FM Carrier Frequency Adjustment".

For NTSC model



For PAL model

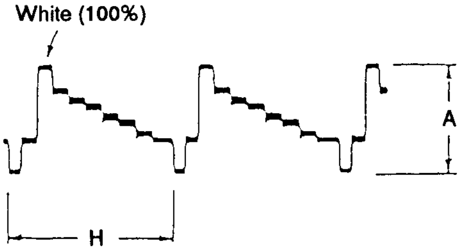


Fig. 6-3-19.

10. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-113 board)

Hi8 mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (S VIDEO input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (CL201)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	74
Specified Value	6.00 ± 0.04 MHz

Adjusting method:

1) Load a Hi8 ME tape, and set the recording mode.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 74, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 1, address: 00.

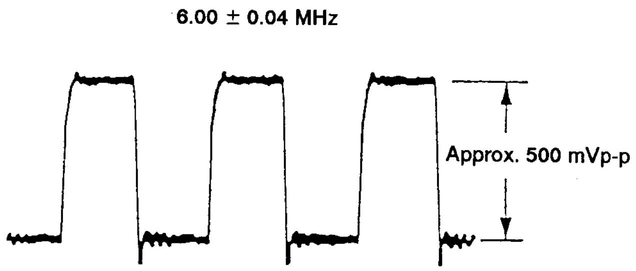


Fig. 6-3-20.

11. Hi8 Mode Y FM Deviation Adjustment (VS-113 board)

Hi8 mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ⑰ of IC201 (DL IN 1) (CL207)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	76
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

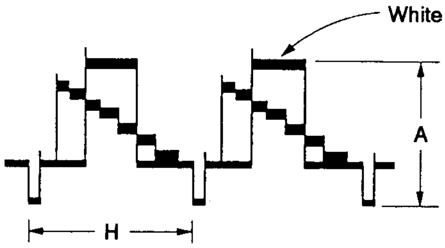
Note 2: The chroma signal input is not required.

Adjusting method:
1) Load a Hi8 ME tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 76, and repeat steps 3) to 5).

Playback signal level	**Changing the data**
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 1, address: 00.
9) Perform "Y FM Carrier Frequency Adjustment".

For NTSC model



For PAL model

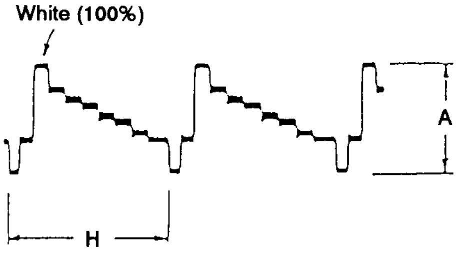


Fig. 6-3-21.

12. Chroma Emphasis Adjustment 1 (VS-113 board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Record
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ③ of IC202 (REC C OUT) (CL217)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum f_0 component

Adjusting method:
1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: ⟨52⟩ [12] to the address.
   ⟨ ⟩ : NTSC model
   [ ] : PAL model
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (yellow section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Convert D_{80} to decimal notation, and obtain D_{80}'. (Refoer to Table 6-1-4. "Hexadecimal notation-decimal notation conversion table")
9) Calculate D_{81}' using following equations (decimal notaion calculation).
   $D_{81}'=D_{80}'-6$
10) Convert D_{81}' to hexadecimal notation, and obtain D_{81}.
11) Set data: D_{81} to address: 81 of page D.
12) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.
3) Set data: 00 to page: 1, address: 00.

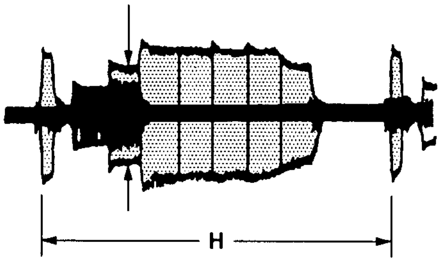

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 6-3-22.

13. REC Y Level Adjustment (VS-113 board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN002 (REC RF)
Measuring Instrument	Oscilloscope Board width limit: OFF
Adjustment Page	D
Adjustment Address	40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 4A, 4B, 4C, 4D, 4E, 4F
Specified Value	A=170 ± 5 mVp-p (NTSC) A=230 ± 5 mVp-p (PAL)

Note 1: Use a ME type tape.

Connection:
1) Connect Pin ④ of CN002 (RF SWP) and GND with a jumper wire.
2) Connect Pin ⑤ of CN002 ($\overline{\text{1/2 RF SWP}}$) and GND with a jumper wire.

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 44, and adjust so that REC Y level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 44 and this data is named D44.
5) Convert D44 to decimal notation, and obtain D44′. (Refer to Table 6-1-4. "Hexadecimal notation-decimal notation conversion table")
6) Calculate D45′, D46′ and D47′ using following equations (decimal notation calculation).

   For NTSC model
   D45′=D44′+5
   D46′=D44′−2
   D47′=D44′−2
   For PAL model
   D45′=D44′+20
   D46′=D44′+13
   D47′=D44′+13
7) Convert D45′, D46′ and D47′ to hexadecimal notation, and obtain D45, D46 and D47.
8) Set data to address: 40 to 4F of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)
9) Set data: 00 to page: 1, address: 00.

Address	Data
40	D44
41	D45
42	D46
43	D47
45	D45
46	D46
47	D47
48	D44
49	D45
4A	D46
4B	D47
4C	D44
4D	D45
4E	D46
4F	D47

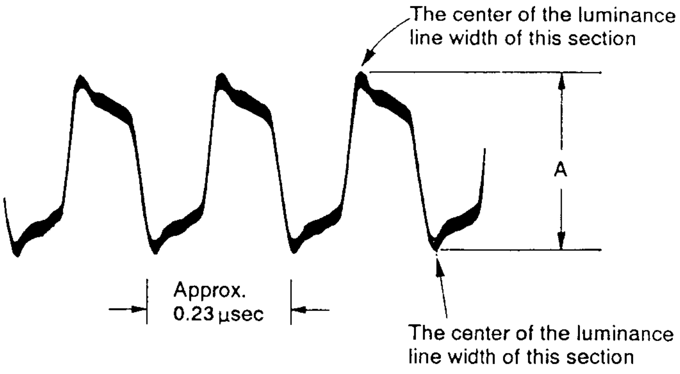

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 6-3-23.

14. REC L Adjustment (VS-113 board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

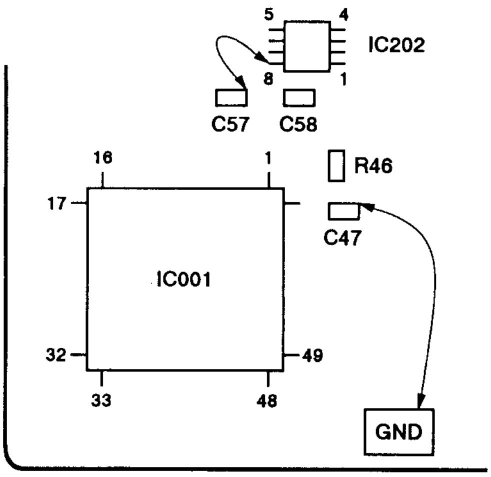
Mode	Record (SP)
Signal	No signal (S VIDEO input)
Measurement Point	Pin ⑥ of CN002 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38, 39, 3A, 3B, 3C, 3D, 3E, 3F
Specified Value	A=9.0 ± 1.0 mVp-p (NTSC) A=11.5 ± 1.0 mVp-p (PAL)

Note 1: Use a ME type tape.

Note 2: Don't insert any plug into the audio (R) terminal.

Connection:

1) Connect Pin ④ of CN002 (RF SWP) and GND with a jumper wire.
2) Connect Pin ⑤ of CN002 ($\overline{\text{1/2 RF SWP}}$) and GND with a jumper wire.
3) Connect Q109 emitter side terminal of C57 (REC Y RF) and Pin ⑧ of IC202 (VIDEO 4.7V) with a jumper wire.



VS-113 board

4) Connect R46 side terminal of C47 (REC ATF) and GND with a jumper wire.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3A, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3A, and this data is named D3A.
5) Set data: D3A to address: 38 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D3A to address: 3C of page D.
8) Press the PAUSE button.
9) Set data: D3A to address: 3E of page D.
10) Press the PAUSE button.
11) Convert D3A to decimal notation, and obtain D3A′. (Refer to Table 6-1-4. "Hexadecimal notation-decimal notation conversion table")
12) Culculate D39′ using following equation (decimal notation calculation).

    D39′=D3A′+12
13) Convert D39′ to hexadecimal notation, and obtain D39.
14) Set data: D39 to address: 39 of page D.
15) Press the PAUSE button of the adjusting remote commander.
16) Set data: D39 to address: 3B of page D.
17) Press the PAUSE button.
18) Set data: D39 to address: 3D of page D.
19) Press the PAUSE button.
20) Set data: D39 to address: 3F of page D.
21) Press the PAUSE button.
22) Set data: 00 to page: 1, address: 00.
23) Perform "REC CHROMA Level Adjustment".

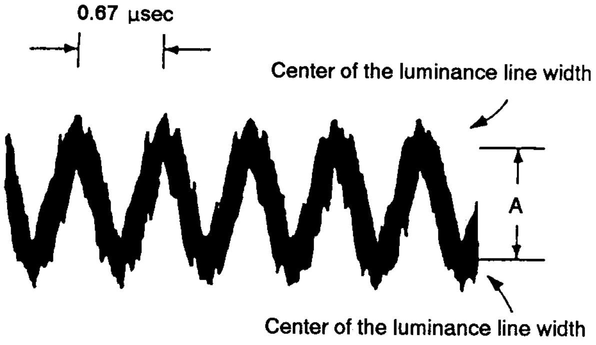


Fig. 6-3-24.

15. REC CHROMA Level Adjustment (VS-113 board)

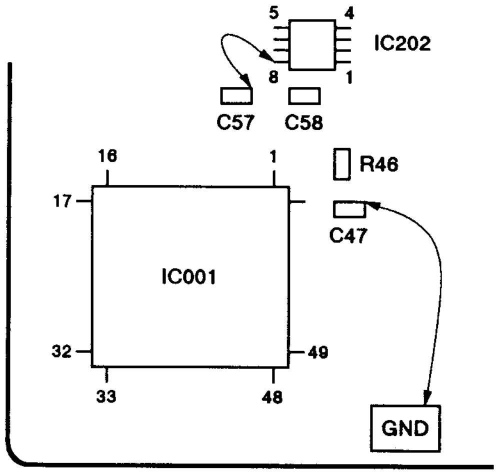
Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Record (SP)
Signal	Color bar (S VIDEO input)
Measurement Point	Pin ⑥ of CN002 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	30, 31, 32, 33 (NTSC) 30, 31, 32, 33, 34, 35, 36, 37 (PAL)
Specified Value	A=42.3 ± 3 mVp-p (NTSC) A=42 ± 3 mVp-p (PAL)

Note 1: Use a ME type tape.

Connection:

1) Connect Q109 emitter side terminal of C57 (REC Y RF) and Pin ⑧ of IC202 (VIDEO 4.7V) with a jumper wire.
2) Connect R46 side terminal of C47 (REC ATF) and GND with a jumper wire.
3) Connect Pin ① of IC001 (REC AFM RF) and GND with a jumper wire.



VS-113 board

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data ρf page: D, address: 30, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 30, and this data is named D30.
5) Set data: D30 to address: 31 to 〈33〉[37] of page: D as shown in following table.
   〈 〉 : NTSC model
   [ ] :PAL model
   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)
6) Set data: 00 to page: 1, address: 00.

Address	Data
31	D30
32	D30
33	D30
[34]	[D30]
[35}	[D30]
[36]	[D30]
[37]	[D30]

[ ]: PAL model only

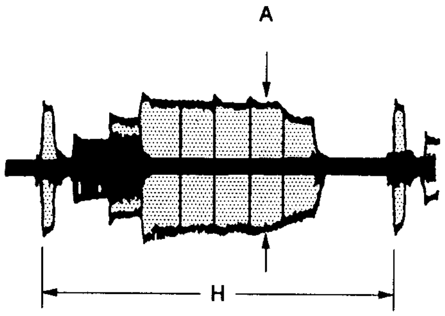


Fig. 6-3-25.

3-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- Unless specified otherwise, use a Hi8 ME tape.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to "STEREO" position unless specified otherwise.

Note:

1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode well be set, and correct adjustments can not be carried out.
   [Monaural mode]
   During recording・・・・REC AFM RF 1.7MHz carriear will not be output.
   During playback・・・・The L+R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-26, and perform adjustments at the power switch [PLAYER or VTR] position.

[Adjustment Procedure]

1) E-E output level check
2) 1.5 MHz deviation adjustment
3) 1.7 MHz deviation adjustment
4) BPF adjustment
5) Overall level characteristics, distortion check
6) Separation check

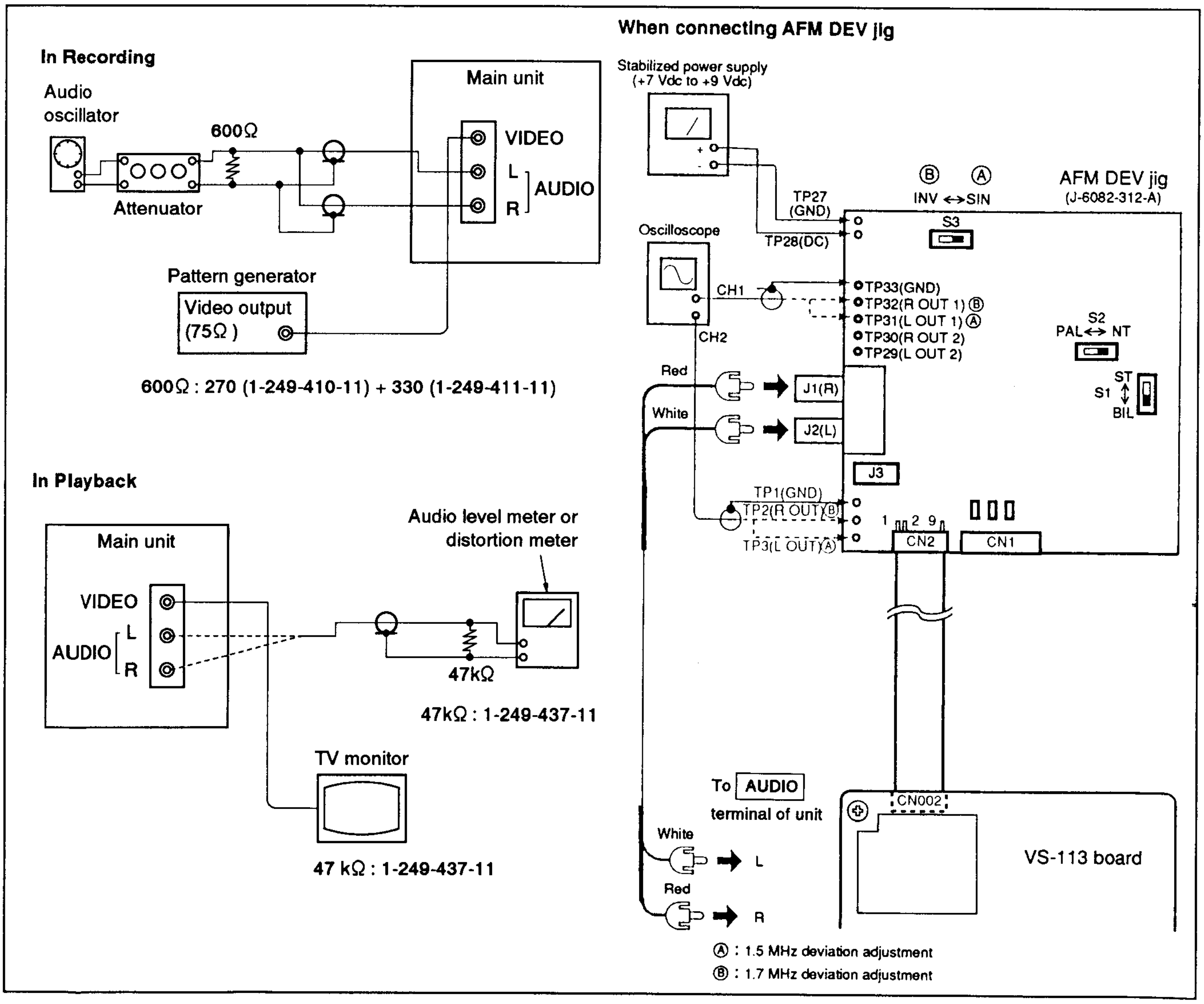

In Recording
Audio oscillator
600Ω
Attenuator
Main unit
VIDEO
L
R
AUDIO
Pattern generator
Video output (75Ω)
600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
In Playback
Main unit
VIDEO
AUDIO
L
R
Audio level meter or distortion meter
47kΩ
47kΩ : 1-249-437-11
TV monitor
47 kΩ : 1-249-437-11
When connecting AFM DEV jig
Stabilized power supply (+7 Vdc to +9 Vdc)
+
-
TP27 (GND)
TP28(DC)
Oscilloscope
CH1
CH2
Ⓑ
Ⓐ
INV ↔ SIN
S3
AFM DEV jig
(J-6082-312-A)
TP33(GND)
TP32(R OUT 1)Ⓑ
TP31(L OUT 1)Ⓐ
TP30(R OUT 2)
TP29(L OUT 2)
S2
PAL↔ NT
ST
S1
BIL
Red
White
J1(R)
J2(L)
J3
TP1(GND)
TP2(R OUT)Ⓑ
TP3(L OUT)Ⓐ
1
2
9
CN2
CN1
To AUDIO terminal of unit
White
L
Red
R
CN002
VS-113 board
Ⓐ : 1.5 MHz deviation adjustment
Ⓑ : 1.7 MHz deviation adjustment

Fig. 6-3-26.

1. E-E Output Level Check

Mode	Recording
Signal	400 Hz, −7.5 dBs, Audio input terminal (left) [right]
Measurement Point	(Headphone terminal left) [Headphone terminal right]
Measuring Instrument	Audio lever meter
Specified Value	−34 ± 2.5 dBs

Note: Load impedance is 8Ω .

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. 1.5 MHz Deviation Adjustment

Sets the spectrum of the L-ch (L+R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8F
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN002 of the VS-113 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 Vdc to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.

    S1 ·············BIL position
    S2 ·············NT position (NTSC)
    PAL position (PAL)
    S3 ·············SIN position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8F and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 1, address: 00.

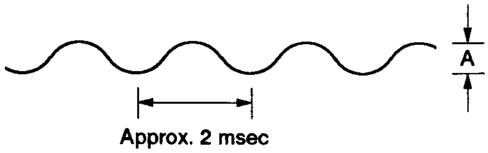


Fig. 6-3-27.

3. 1.7 MHz Deviation Adjustment

Sets the spectrum of the R-ch (L–R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8E
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN002 of the VS-113 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ·············BIL position
   S2 ·············NT position (NTSC)
   PAL position (PAL)
   S3 ·············INV position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8E and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 1, address: 00.

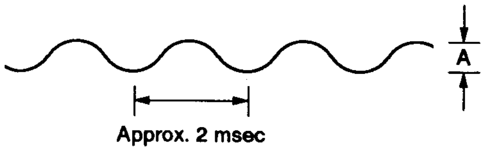


Fig. 6-3-28.

4. BPF Adjustment

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: for BPF adjustment (WR5-11NS (NTSC) WR5-11CS (PAL))
Measuring point	Right or left audio output terminal
Measuring device	Distortion meter
Adjustment page	D
Adjustment address	8D
Specified value	The right and left channel distortion rates should be almost the same (within ± 1%) and minimum

Adjustment Method

1) Set data:01 to page:1, address:00.
2) Set the Hi-Fi sound switch (menu display) to " $\boxed{2}$ ".
3) Change the data of page:D, address:8D and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch to " $\boxed{1}$ ".
6) Change the data of page:D, address:8D and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address:8D so that the distortions rates when the Hi-Fi sound switch is set to " $\boxed{2}$ " and set to " $\boxed{1}$ " respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 1, address: 00.
11) Set the Hi-Fi sound switch to "STEREO".

5. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 200 kHz to 6 kHz band-path filter is used

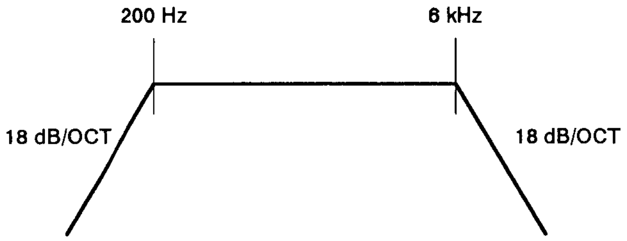


Fig. 6-3-29.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.8% (Note 2).

6. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

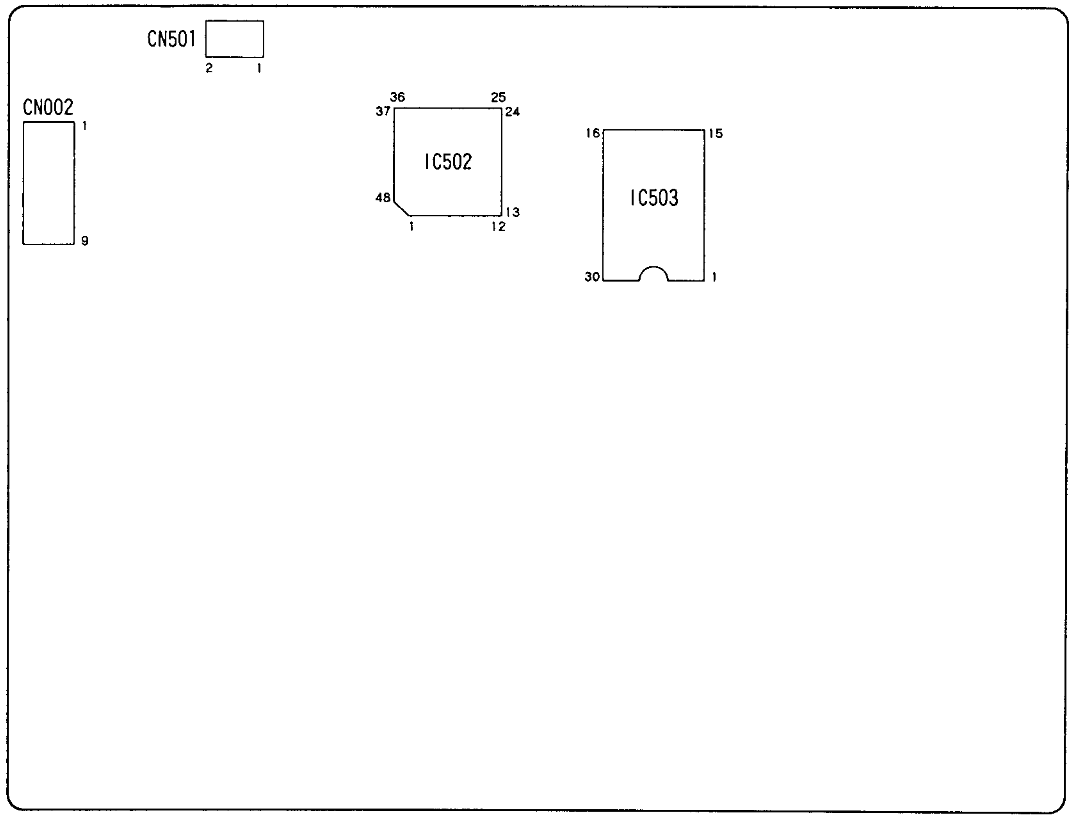
Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

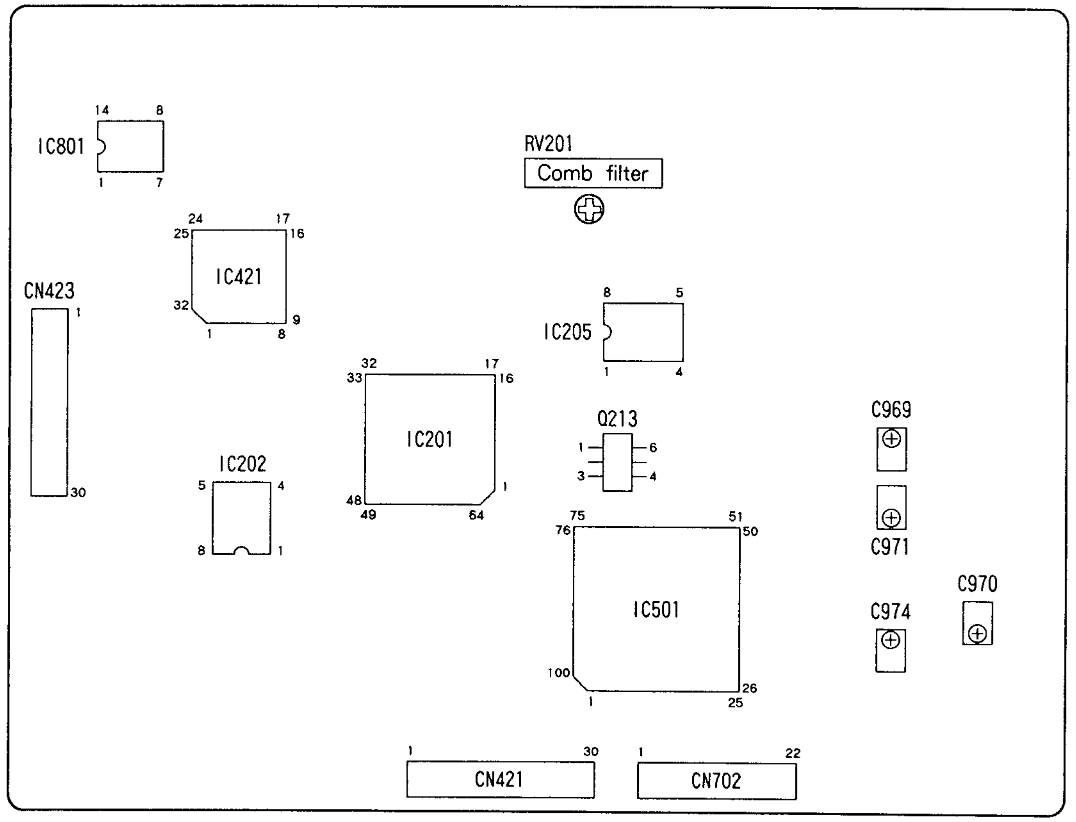
1) Insert a shorting plug into the audio input terminal (left) [right], and input a 400 Hz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (400 Hz) of the audio output terminal (left) [right] is below –27.5 dBs.

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VS-113 BOARD (COMPONENT SIDE)


CN501
2
1
CN002
1
9
36
25
37
24
IC502
48
13
1
12
16
15
IC503
30
1

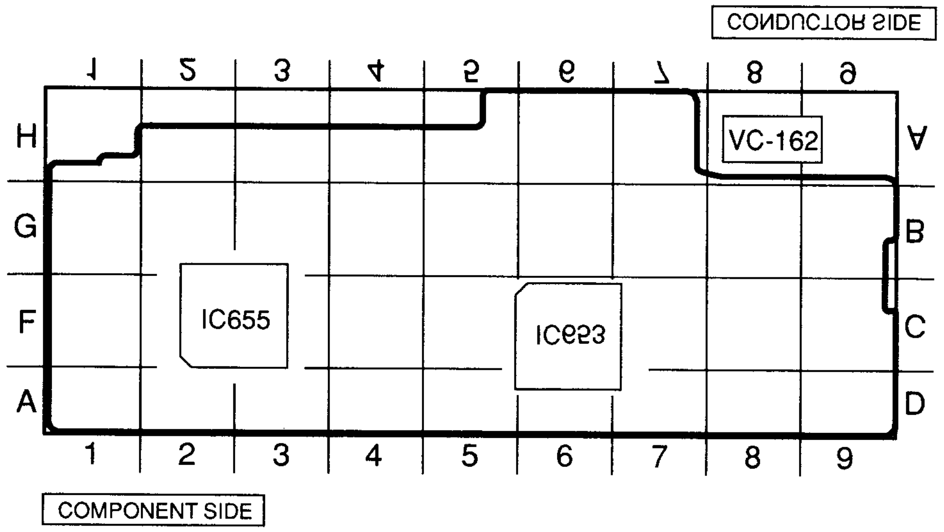
VS-113 BOARD (CONDUCTOR SIDE)

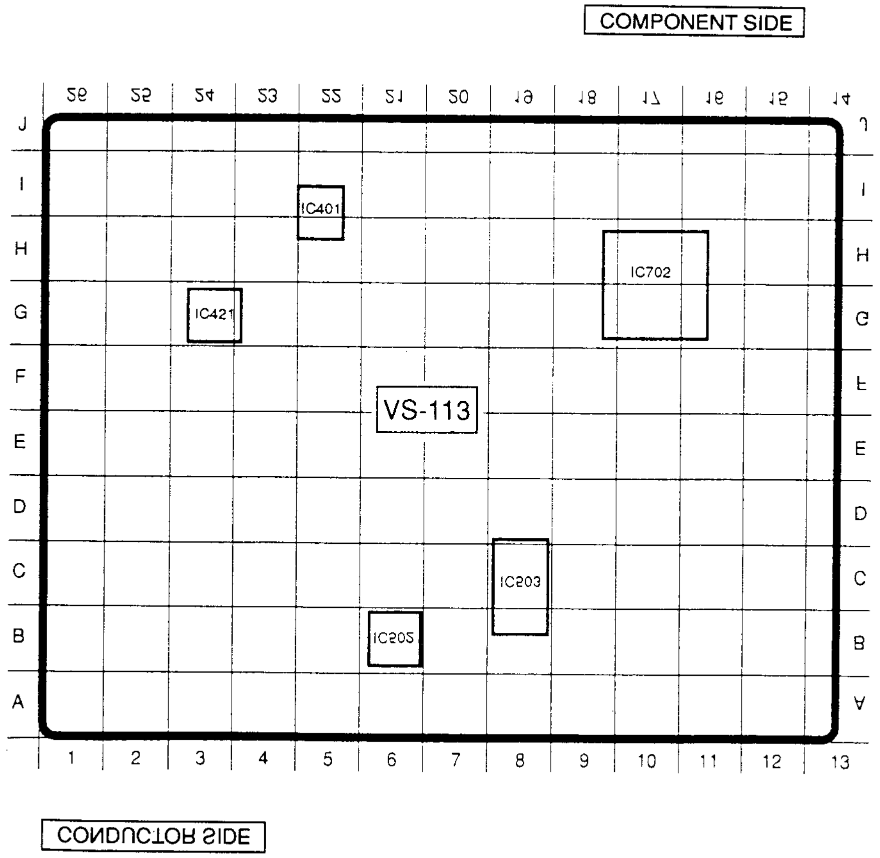

14
8
IC801
1
7
RV201
Comb filter
24
17
25
16
IC421
32
9
1
8
CN423
1
30
8
5
IC205
1
4
32
17
33
16
IC201
48
1
49
64
Q213
1
6
3
4
IC202
5
4
8
1
C969
C971
C970
C974
75
51
76
50
IC501
100
26
1
25
1
30
CN421
1
22
CN702

<PARTS REFERENCE SHEET>

You can find the parts position of mount locations applying to boards of a set.

Take a copy CAMERA COLOR REPRODUCTION FRAME and PARTS REFERENCE SHEET with a clear sheet for use.


CONDUCTOR SIDE
VC-162
IC655
IC653
H
G
F
A
B
C
D
1
2
3
4
5
6
7
8
9
COMPONENT SIDE


COMPONENT SIDE
26
25
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J
I
H
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F
E
D
C
B
A
IC401
IC702
IC421
VS-113
IC203
IC202
1
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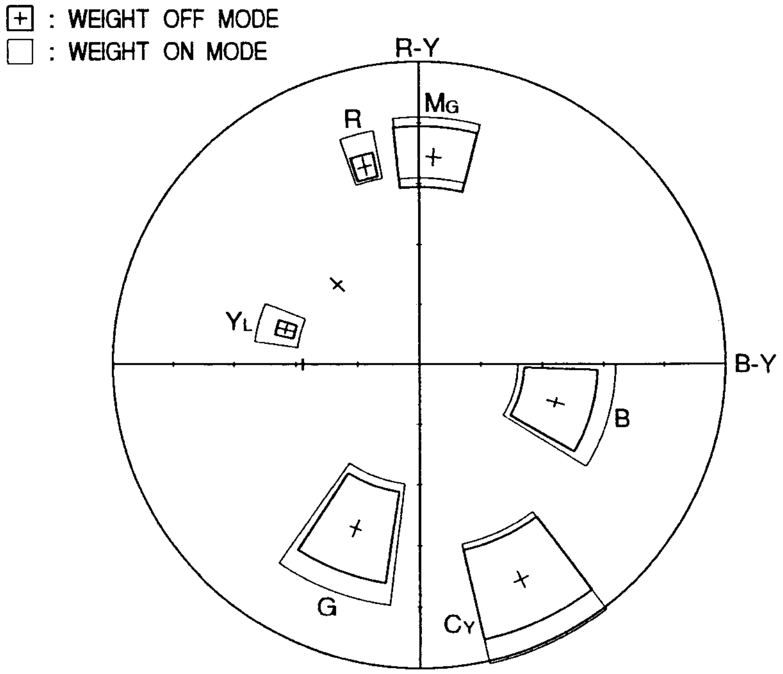
CONDUCTOR SIDE

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT


⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE
R-Y
B-Y
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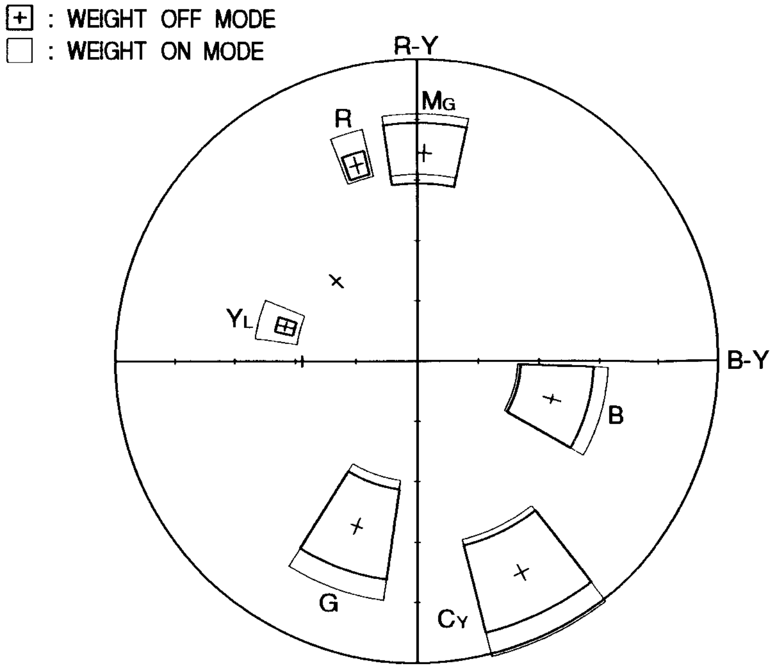
CCD-TR3000 (NTSC)

Take a copy CAMERA COLOR REPRODUCTION FREME and Parts reference sheets with a clear sheet for use.


⊞ : WEIGHT OFF MODE
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R-Y
B-Y
MG
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CCD-TR3000E (PAL)